An experience you won’t want to miss!

Make plans now to engage with experts, colleagues, education excellence, and innovative solutions.

No other meeting offers the opportunity to:

• **Create** your ideal learning experience from dynamic educational formats
• **Engage** with experts worldwide to discuss cutting-edge cases
• **Connect** with colleagues across all orthopaedic specialties
• **Explore** the world’s largest display of orthopaedic technology
• **Learn** new techniques and strengthen your skills

Member housing is now open
Call for Abstracts opens April 1

View the latest AAOS 2020 Annual Meeting details at [aaos.org/annual](http://aaos.org/annual).
Hear from
Your Academy Leadership

Thursday, March 14
10:30 AM
Venetian/Sands Expo
Palazzo Ballroom E

Program Also Includes
- Welcome Guest Nation – Republic of Korea
- Recognition of Industry Donors
- Kappa Delta & OREF Awards
- Diversity Award
- Humanitarian Award
- William W. Tipton, Jr, MD Leadership Award

Quality of life is more than a list of destinations. It’s a way of living. We honor that perspective by putting quality into everything we do. Genesis is proud to be J.D. Power’s Highest Ranked Brand in Initial Quality. See for yourself at Genesis.com

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Dear Colleagues,

I’d like to personally welcome you to Las Vegas for the AAOS 2019 Annual Meeting. Our Academy Meeting, Focused on You, allows you to customize your educational experience to appeal to your practice area or career stage. Whether you are looking to broaden your knowledge or dive into a topic area, there is an educational path for you here.

Annual Meeting Committee Chair Andrew H. Schmidt, MD, and his team have created an exceptional, newly-invigorated program with a powerful selection of educational opportunities. Over the next few days you will have exclusive access to:

• 1,000+ posters keep you in the forefront of cutting-edge research globally
• 800+ expert faculty present the highest quality information about new and hot topics
• 725+ Industry Exhibits provide you with resources and solutions to address your toughest cases
• 230+ ICLs expose you to in-depth learning that is vital to your ongoing success in practice
• 30+ Case Presentations engage you in discussions of complex cases with peers and experts
• 25 Symposia give you a balanced perspective on the most relevant topics in orthopaedics
• 10+ Technical Skills Courses allow you to focus on positioning and approach
• Specialty Day provides you with the latest updates in each field from 14 participating societies
• NEW! Innovation Theater (Hall B, Booth 3032) offers you fast and focused presentations on the latest products and solutions

Be sure to stop in Academy Hall (Venetian Ballroom) for all your Academy and Member needs. From membership, education, and career planning to quality, research and advocacy, the solutions, actions and resources that are part of AAOS are gathered here. AAOS staff are on hand and ready to help you navigate everything the meeting has to offer.

Join us at “Your Academy 2019” (Palazzo Ballroom E) on Thursday, at 10:15 AM to hear from your leadership, including an Incoming Presidential Address from Kristy L. Weber, MD. This year, we recognize the Republic of Korea as the Guest Nation and will announce recipients of the Diversity, Humanitarian, Kappa Delta, OREF, and Tipton Leadership awards. You will not want to miss remarks from guest speaker Frank Sesno Correspondent, Anchor and Washington Bureau Chief, CNN (1984-2001; 2005-2009) and Director, George Washington University’s School of Media & Public Affairs.

I would like to thank each of you for taking time out to build your proficiency and contributing your expertise to this remarkable event. It is your time to network with colleagues, see the latest science and innovation, and learn about practice-changing updates ultimately improving the care of our patients.

David A. Halsey, MD
President
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General Information

Our Academy Meeting

Focused on You

Customize your meeting with the *My Academy* app
C. Craig Satterlee, MD  
Secretary  
Board of Specialty Societies  
North Kansas City, Missouri

Jacob M. Buchowski, MD  
Member-at-Large  
Saint Louis, Missouri

Elizabeth G. Matzkin, MD  
Member-at-Large  
Boston, Massachusetts

Ronald A. Navarro, MD  
Member-at-Large  
Harbor City, California

Thomas W. (Quin) Throckmorton, MD  
Member-at-Large  
Germantown, Tennessee

James J. Balaschak  
Lay Member  
Carefree, Arizona

Alan S. Hilibrand, MD, MBA  
Treasurer-Elect (Ex-Officio)  
Philadelphia, Pennsylvania

Thomas E. Arend, Jr, Esq, CAE  
Chief Executive Officer  
(Ex-Officio)  
Rosemont, Illinois
Annual Business Meetings
All Fellows are urged to attend the Annual Business Meetings held in Palazzo Ballroom E of the Venetian/Sands Expo. The meetings are held on Thursday, March 14, 2019, beginning at 9:30 AM. There is one business meeting for the American Academy of Orthopaedic Surgeons (“Academy”), the 501(c)(3) organization, immediately followed by the business meeting of the American Association of Orthopaedic Surgeons (“Association”), the 501(c)(6) organization.

2019 Nominating Committee
In June 2018, the Fellowship elected five members of the 2019 Nominating Committee by ballot. In June 2018, the BOC/BOS elected one representative to serve on the 2019 Nominating Committee. The Board of Directors appointed the Chair of the Nominating Committee in March 2018.

The members of the 2019 Nominating Committee are:

- David D. Teuscher, MD, Chair (TX)
- Sara L. Edwards, MD (CA)
- Richard J. Hawkins, MD (SC)
- John D. Kelly, IV, MD (PA)
- William M. Ricci, MD (NY)
- Richard H. Rothman, MD (PA) – (Deceased)
- Jennifer M. Weiss, MD (CA)
- Lawrence S. Halperin, MD (FL), BOC/BOS Representative

The 2019 Nominating Committee provides its slate of nominees for each vacancy to be filled to the Fellowship in November 2018. If unopposed, this slate is voted on during the Association Business Meeting on Thursday, March 14, 2019.

2020 Nominating Committee
Nominations for the 2020 Nominating Committee are accepted from the floor during the Association Business Meeting on Thursday, March 14, 2019. All Fellows receive an electronic ballot after the 2019 Annual Meeting, with an opportunity to cast their votes for nominees to fill the elected positions on the 2020 Nominating Committee.

Bylaws Committee
Proposed amendments to the Academy and the Association Bylaws are considered at the 2019 Annual Meeting if submitted by September 1, 2018. The AAOS Bylaws Committee conducts an Open Hearing to receive comments on the proposed bylaw amendments on Wednesday, March 13, 2019, beginning shortly after the conclusion of the Resolutions Committee Open Hearing in Room 3301. It is anticipated that the Bylaws Committee Open Hearing will begin around 1:30 PM.

At the business meetings on Thursday, March 14, 2019, the Bylaws Committee presents its recommendations regarding each set of the proposed amendments to the Bylaws. Shortly after the Annual Meeting, these recommendations are voted on by the Fellowship.

Resolutions Committee
Any 20 or more Fellows, the majority of the members of the Board of Directors of a State Orthopaedic Society, a majority of the members of the Board of Directors of an orthopaedic specialty society that is a member of the Board of Specialty Societies, the AAOS Board of Directors, a supermajority of the Board of Councilors, or a supermajority of the member societies of the Board of Specialty Societies may offer a resolution for consideration by the Fellowship at the 2019 Annual Meeting. To be binding on the Academy or the Association, a resolution must be submited and considered by the Board of Councilors and Board of Specialty Societies before being voted upon by the Fellowship after the Annual Meeting at which it was discussed.

To be considered by the Board of Councilors and the Board of Specialty Societies at the Fall Meeting, AAOS must receive a resolution on or before September 1, 2018. Emergency resolutions are accepted until February 6, 2019, but only if all other conditions are met. Copies of each duly submitted resolution are available and sent by email to the Fellowship in January or February 2019.

The AAOS Resolutions Committee holds an Open Hearing on the resolutions on Wednesday, March 13, 2019, beginning at 1:00 PM in Room 3301. During the Open Hearing, proponents and opponents discuss those resolutions under consideration. At the business meetings on Thursday, March 14, 2019, the Resolutions Committee presents its recommendations regarding each resolution under consideration. Shortly after the Annual Meeting, these recommendations are voted on by the Fellowship.

Agenda for the Business Meeting of the American Academy of Orthopaedic Surgeons
Thursday, March 14, 2019, at 9:30 AM
Venetian/Sands Expo, Palazzo Ballroom E
David A. Halsey, MD, Presiding
1. Call to Order and Appointments
2. Report of the Treasurer
3. Report of the Orthopaedic Research and Education Foundation (OREF)
4. Report of the Resolutions Committee [DISCUSSION]
5. Report of the Bylaws Committee [DISCUSSION]
6. Adjournment

Agenda for the Business Meeting of the American Association of Orthopaedic Surgeons
Thursday, March 14, 2019, at 10:00 AM
Venetian/Sands Expo, Palazzo Ballroom E
David A. Halsey, MD, Presiding
1. Call to Order and Appointments
2. Nominations for the 2020 Nominating Committee. Those ineligible to serve on the 2020 Nominating Committee, pursuant to Article XII, Paragraph 12.2 of the Association Bylaws, are Inactive Fellows, Emeritus Fellows, current members of the Board of Directors, and:
   - Frederick M. Azar, MD, Chair, (’18)
   - James H. Beaty, MD (’18 and elected 3-plus terms)
   - Louis C. Bigliani, MD (elected 3-plus terms)
   - David S. Bradford, MD (elected 3-plus terms)
   - Andrew R. Burgess, MD (’18)
   - Michael W. Chapman, MD (elected 3-plus terms)
   - Robert D. D’Ambrosia, MD (elected 3-plus terms)
Kenneth E. DeHaven, MD (elected 3-plus terms)
Lawrence D. Dorr, MD (elected 3-plus terms)
Sara L. Edwards, MD ('19)
Charles H. Epps, Jr, MD (elected 3-plus terms)
Freddie H. Fu, MD (elected 3-plus terms)
Leesa M. Galatz, MD ('17)
Lawrence S. Halperin, MD ('19)
Richard J. Hawkins, MD ('19)
James D. Heckman, MD ('19)
Serena S. Hu, MD ('18)
Joseph P. Iannotti, MD (elected 3-plus terms)
Douglas W. Jackson, Jr, MD (elected 3-plus terms)
Joshua J. Jacobs, MD ('17)
John D. Kelly, IV, MD ('19)
L. Scott Levin, MD ('17)
William N. Levine, MD ('17)
Bernard F. Morrey, MD (elected 3-plus terms)
Mary I. O'Connor, MD ('17)
Alexandra (Alexe) Page, MD ('18)
Chitranjan S. Ranawat, MD (elected 3-plus terms)
William C. Ricci, MD ('19)
Charles A. Rockwood, Jr, MD (elected 3-plus terms)
Peter J. Stern, MD (elected 3-plus terms)
Marc F. Swiontkowski, MD (elected 3-plus terms)
David D. Teuscher, MD, Chair ('19)
Roby C. Thompson, Jr, MD (elected 3-plus terms)
James R. Urbaniai, MD (elected 3-plus terms)
Alexander R. Vaccaro, MD, PhD, MBA ('18)
Russell F. Warren, MD (elected 3-plus years)
Stuart L. Weinstein, MD ('17 and elected 3-plus terms)
Jennifer M. Weiss, MD ('17)
Augustus A. White III, MD (elected 3-plus terms)
Robert A. Winquist, MD (elected 3-plus years)
Joseph D. Zuckerman, MD ('18)

3. Report of the Political Action Committee of the American Association of Orthopaedic Surgeons (Orthopaedic PAC)
4. Report of the Resolutions Committee [DISCUSSION]
5. Report of the Bylaws Committee [DISCUSSION]
6. Election of AAOS Officer and Other Positions [VOTE]
7. Recognition of Retiring Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons
8. Recognition of New Members of the Board of the American Academy of Orthopaedic Surgeons and the American Association of Orthopaedic Surgeons
9. Adjournment

Agenda for Your Academy 2019
Thursday, March 14, 2019, at 10:30 AM
Venetian/Sands Expo, Palazzo Ballroom E
David A. Halsey, MD, Presiding
1. Welcome International and Specialty Society Presidents
2. Welcome Guest Nation Republic of Korea
3. Recognition of Industry Donors
4. Presidential Address – David A. Halsey, MD
5. Presentation of Awards
   A. Kappa Delta Awards
   B. OREF Clinical Research Award
   C. Diversity Award
   D. Humanitarian Award
   E. William W. Tipton, Jr, MD, Leadership Award
6. Incoming First Vice-Presidential Address – Joseph A. Bosco III, MD
7. Incoming Presidential Address – Kristy L. Weber, MD
8. Recognition of Past President – David A. Halsey, MD
9. AAOS Presidential Guest Speaker – Frank Sesno, Correspondent, Anchor and Washington Bureau Chief, CNN

Award Presentations at the Annual Meeting
Join the American Academy of Orthopaedic Surgeons as we recognize the 2019 Kappa Delta and OREF Clinical Research Award Winners

OREF Clinical Research Award:
Musculoskeletal Uses of Botulinum Toxins: A 30-year Translational Journey at Wake Forest School of Medicine
L. Andrew Koman, MD
Co-Authors: Beth Paterson Smith, PhD; Thomas L. Smith, PhD

Kappa Delta Young Investigator Award:
Understanding Functional Adaptation of Maternal Bone to Reproduction and Lactation
Sherry Liu, PhD
Co-Authors: Chantal M. de Bakker, PhD; Yihan Li, MS

Kappa Delta Ann Doner Vaughn Award:
Predictors of Clinical Outcome Following Revision Anterior Cruciate Ligament Reconstruction
Rick Wright, PhD
Co-Authors: Laura J. Huston, MS; Amanda K. Haas, MA; Christina R. Allen, MD; Daniel E. Cooper, MD; Thomas M. DeBerardino, MD; Michael J. Stuart, MD; Brett A. Lantz, MD; Kurt P. Spindler, MD; MARS Group

Kappa Delta Elizabeth Winston Lanier Award:
Visualizing Pre-Osteoarthritis: Integrating MRI UTE-T2* with Mechanics and Biology to Combat Post-Traumatic Osteoarthritis
Constance Chu, MD
Co-Authors: Ashley A. Williams, MS; Jennifer C. Erhar-Hledik, PhD; Matthew R. Titchenal, PhD; Yongxian Qian, PhD; Thomas P. Andriacchi, PhD
**TUESDAY, MARCH 12**

**Education** | **Venetian/Sands Expo** | **Time**
--- | --- | ---
Poster Session I – P0001-0500, P1001-1011 | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Scientific Exhibits | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Orthopaedic Video Theater | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Nursing and Allied Health Course – NUR1 | Room 2204 | 7:30 AM – 12:00 PM
Career Development | See page 40 | 8:00 AM – 5:30 PM
Instructional Courses | See pages 48 - 214 #192 1:30 – 4:30 PM | 8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM
Symposia & Paper Presentations | See pages 48 - 214 | 8:00 – 10:00 AM 10:30 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM
CPT and ICD-10 Coding Fundamentals for Starting Your Practice #190 | Room 2102 | 8:00 – 11:00 AM
Poster Tours | Academy Hall, Venetian Ballroom, See page 41 | 10:00 AM – 5:30 PM
Practice Management for Residents and Fellows-in-Training #191 | Room 2102 | 12:30 – 5:00 PM
Flash Five® What's Coming Down the Pike? | Room 3401 | 1:30 – 2:30 PM
Nursing and Allied Health Course – NUR2 | Room 2204 | 1:30 – 6:00 PM
The Way I See It…® Overlapping Surgery in 2019 | Room 3401 | 4:00 – 5:00 PM

**WEDNESDAY, MARCH 13**

**Education** | **Venetian/Sands Expo** | **Time**
--- | --- | ---
Poster Session I – P0001-0500, P1001-1011 | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Scientific Exhibits | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Orthopaedic Video Theater | Academy Hall, Venetian Ballroom | 7:00 AM – 6:00 PM
Nursing and Allied Health Course – NUR3 | Room 2204 | 7:30 AM – 12:00 PM
Career Development | See page 40 | 8:00 AM – 5:30 PM
Instructional Courses | See pages 48 - 214 | 8:00 – 10:00 AM 11:00 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM
Symposia & Paper Presentations | See pages 48 - 214 | 8:00 – 10:00 AM 11:00 AM – 12:30 PM 1:30 – 3:30 PM 4:00 – 6:00 PM
**WEDNESDAY, MARCH 13 (continued)**

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Showdowns® Debates, Dilemmas and Controversies in Total Hip Arthroplasty</td>
<td>Room 3401</td>
<td>8:00 – 9:00 AM</td>
</tr>
<tr>
<td>Poster Tours</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>8:30 AM – 5:30 PM</td>
</tr>
<tr>
<td>The Way I See It…® Artificial Intelligence, Machine Learning and Big Data</td>
<td>Room 3401</td>
<td>11:00 AM – 12:00 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Rooms 3101 and 3103, See page 41</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td>Nursing and Allied Health Course – NUR4</td>
<td>Room 2204</td>
<td>1:30 – 6:00 PM</td>
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</tbody>
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<table>
<thead>
<tr>
<th>Exhibit Hall</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Exhibits</td>
<td>Halls A – D</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Ask an Expert Sessions</td>
<td>Hall C, Booth 4300, See page 359</td>
<td>9:30 AM – 4:45 PM</td>
</tr>
<tr>
<td>Technology Theater</td>
<td>Hall A, Booth 771, See page 360</td>
<td>9:30 AM – 4:45 PM</td>
</tr>
<tr>
<td>Innovation Theater</td>
<td>Hall B, Booth 3032, See page 356</td>
<td>9:45 AM – 3:35 PM</td>
</tr>
<tr>
<td>Dedicated Exhibit Time*</td>
<td>Halls A – D</td>
<td>10:00 – 11:00 AM</td>
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<td>12:30 – 1:30 PM</td>
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<tr>
<td></td>
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<td>3:30 – 4:00 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Ask an Expert, Booth 4300</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td></td>
<td>Technology Theater, Booth 771, See page 362</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Halls A – D, Booths 332, 3408 &amp; 6841</td>
<td>3:30 – 4:00 PM</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>General</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Assembly Open Forum</td>
<td>Room 904</td>
<td>10:00 – 11:00 AM</td>
</tr>
<tr>
<td>Resolutions Committee Open Hearing</td>
<td>Room 3301</td>
<td>1:00 PM</td>
</tr>
<tr>
<td>Bylaws Committee Open Hearing</td>
<td>Room 3301</td>
<td>1:30 PM (estimated)</td>
</tr>
</tbody>
</table>

*No educational activities are scheduled.  
**Exhibitor sessions not sponsored or endorsed by AAOS; Non-CME events.

**THURSDAY, MARCH 14**

**Registration Hall & Hours:** 7:00 AM – 6:00 PM  
**Academy Hall, Venetian Ballroom Hours:** 7:00 AM – 6:00 PM

<table>
<thead>
<tr>
<th>Education</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
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</thead>
<tbody>
<tr>
<td>Poster Session II – P0501-1012</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Scientific Exhibits</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Video Theater</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Flash Five® What's Coming Down the Pike?</td>
<td>Room 3401</td>
<td>8:00 – 9:00 AM</td>
</tr>
<tr>
<td>Instructional Courses</td>
<td>See pages 48 - 214</td>
<td>8:00 – 10:00 AM</td>
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<td>11:00 AM – 12:30 PM</td>
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<td>1:30 – 3:30 PM</td>
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<td></td>
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<td>4:00 – 6:00 PM</td>
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<tr>
<td>Symposia &amp; Paper Presentations</td>
<td>See pages 48 - 214</td>
<td>8:00 – 10:00 AM</td>
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<td>4:00 – 6:00 PM</td>
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### Thursday, March 14 (continued)

<table>
<thead>
<tr>
<th>Event</th>
<th>Location</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nursing and Allied Health Course – CAST1</td>
<td>Room 310</td>
<td>8:15 AM – 5:45 PM</td>
</tr>
<tr>
<td>Poster Tours</td>
<td>Academy Hall, Venetian Ballroom, See page 41</td>
<td>8:30 AM – 5:30 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Rooms 3101 and 3103, See page 362</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td>Showdowns® Controversies in Spine Surgery</td>
<td>Room 3401</td>
<td>1:30 – 2:30 PM</td>
</tr>
<tr>
<td>The Way I See It…® Surgeon Burnout</td>
<td>Room 3401</td>
<td>4:00 – 5:00 PM</td>
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</tbody>
</table>

#### Exhibit Hall

<table>
<thead>
<tr>
<th>Event</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
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<tbody>
<tr>
<td>Exhibits</td>
<td>Halls A – D</td>
<td>9:00 AM – 5:00 PM</td>
</tr>
<tr>
<td>Ask an Expert Sessions</td>
<td>Hall C, Booth 4300, See page 359</td>
<td>9:30 AM – 4:45 PM</td>
</tr>
<tr>
<td>Technology Theater</td>
<td>Hall A, Booth 771, See page 360</td>
<td>9:30 AM – 4:45 PM</td>
</tr>
<tr>
<td>Innovation Theater</td>
<td>Hall B, Booth 3032, See page 356</td>
<td>9:45 AM – 3:35 PM</td>
</tr>
<tr>
<td>Dedicated Exhibit Time*</td>
<td>Halls A – D</td>
<td>10:00 – 11:00 AM</td>
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<td>12:30 – 1:30 PM</td>
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<td></td>
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<td>3:30 – 4:00 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Ask an Expert, Booth 4300</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td></td>
<td>Technology Theater, Booth 771, See page 362</td>
<td></td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Halls A – D, Booths 332, 3408 &amp; 6841</td>
<td>3:30 – 4:00 PM</td>
</tr>
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#### General

<table>
<thead>
<tr>
<th>Event</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Speed Mentoring for Residents #390</td>
<td>Room 3301</td>
<td>8:00 – 9:30 AM</td>
</tr>
<tr>
<td>Business Meetings</td>
<td>Palazzo Ballroom E</td>
<td>9:30 AM</td>
</tr>
<tr>
<td>Your Academy 2019 featuring remarks from Presidential Guest Speaker: Frank Sesno</td>
<td>Palazzo Ballroom E</td>
<td>10:30 AM</td>
</tr>
<tr>
<td>Forum for Young Orthopaedic Surgeons</td>
<td>Room 3301</td>
<td>11:00 AM – 12:30 PM</td>
</tr>
<tr>
<td>Resident Assembly Business Meeting</td>
<td>Room 3301</td>
<td>1:30 – 3:30 PM</td>
</tr>
<tr>
<td>The Resident Bowl</td>
<td>Palazzo Ballroom P</td>
<td>4:00 – 6:00 PM</td>
</tr>
</tbody>
</table>

*No educational activities are scheduled.

**Exhibitor sessions not sponsored or endorsed by AAOS; Non-CME events.

### Friday, March 15

<table>
<thead>
<tr>
<th>Event</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Poster and Scientific Exhibit Award Ceremony and Breakfast</td>
<td>Poster Tour Stage, Academy Hall, Venetian Ballroom</td>
<td>7:00 AM</td>
</tr>
<tr>
<td>Poster Session II – P0501-1012</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Scientific Exhibits</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Video Theater</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 6:00 PM</td>
</tr>
</tbody>
</table>

**Registration Hall G Hours: 7:00 AM – 6:00 PM**

**Academy Hall, Venetian Ballroom Hours: 7:00 AM – 6:00 PM**
FRIDAY, MARCH 15 (continued)

<table>
<thead>
<tr>
<th>Event</th>
<th>Location/Hours</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Instructional Courses</td>
<td>See pages 48 - 214</td>
<td>8:00 – 10:00 AM, 11:00 AM – 12:30 PM, 1:30 – 3:30 PM, 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Review Course #490</td>
<td>Room 2102</td>
<td>8:00 AM – 5:15 PM</td>
</tr>
<tr>
<td>Symposia &amp; Paper Presentations</td>
<td>See pages 48 - 214</td>
<td>8:00 – 10:00 AM, 11:00 AM – 12:30 PM, 1:30 – 3:30 PM, 4:00 – 6:00 PM</td>
</tr>
<tr>
<td>Nursing and Allied Health Course – CAST2</td>
<td>Room 310</td>
<td>8:15 AM – 5:45 PM</td>
</tr>
<tr>
<td>Poster Tours</td>
<td>Academy Hall, Venetian Ballroom, See page 41</td>
<td>8:30 AM – 4:00 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Rooms 3101 and 3103, See page 362</td>
<td>12:40 – 1:25 PM</td>
</tr>
<tr>
<td>Orthopaedic Surgeons Changing the Game: Paper Presentations and The Way I See It...©</td>
<td>Room 3401</td>
<td>1:30 – 3:30 PM</td>
</tr>
<tr>
<td>Exhibit Hall</td>
<td>Venetian/Sands Expo</td>
<td>Time</td>
</tr>
<tr>
<td>Exhibits</td>
<td>Halls A – D</td>
<td>9:00 AM – 3:00 PM</td>
</tr>
<tr>
<td>Ask an Expert Sessions</td>
<td>Hall C, Booth 4300, See page 359</td>
<td>9:30 AM – 2:45 PM</td>
</tr>
<tr>
<td>Technology Theater</td>
<td>Hall A, Booth 771, See page 360</td>
<td>9:30 AM – 2:45 PM</td>
</tr>
<tr>
<td>Innovation Theater</td>
<td>Hall B, Booth 3032, See page 356</td>
<td>9:45 AM – 2:35 PM</td>
</tr>
<tr>
<td>Complimentary Beverage Break</td>
<td>Halls A - D, Booths 332, 3408 &amp; 6841</td>
<td>10:00 – 11:00 AM</td>
</tr>
<tr>
<td>Dedicated Exhibit Time*</td>
<td>Halls A - D</td>
<td>10:00 – 11:00 AM, 12:30 – 1:30 PM</td>
</tr>
<tr>
<td>Industry Lunch &amp; Learn Sessions**</td>
<td>Ask an Expert, Booth 4300 Technology Theater, Booth 771, See page 362</td>
<td>12:40 – 1:25 PM</td>
</tr>
</tbody>
</table>

General

<table>
<thead>
<tr>
<th>Event</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resident Education Forum</td>
<td>Room 904</td>
<td>10:00 – 11:00 AM</td>
</tr>
</tbody>
</table>

*No educational activities are scheduled.*

**Exhibitor sessions not sponsored or endorsed by AAOS; Non-CME events.

SATURDAY, MARCH 16 – SPECIALTY DAY

<table>
<thead>
<tr>
<th>Event</th>
<th>Venetian/Sands Expo</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Specialty Day</td>
<td>See page 32</td>
<td>Times vary</td>
</tr>
<tr>
<td>Poster Session II – P0501-1012</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 1:00 PM</td>
</tr>
<tr>
<td>Scientific Exhibits</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 1:00 PM</td>
</tr>
<tr>
<td>Orthopaedic Video Theater</td>
<td>Academy Hall, Venetian Ballroom</td>
<td>7:00 AM – 1:00 PM</td>
</tr>
</tbody>
</table>
Focus on Your Orthopaedic Resources

The Exhibit Hall is your go-to resource for solutions.

Nowhere else can you:

• See new products and technology from more than 700 companies
• Connect with industry experts from major orthopaedic and device manufacturers
• Compare products and plan purchases for your hospital or practice

Exhibit Hall Hours

<table>
<thead>
<tr>
<th>Time</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>9:00 AM – 5:00 PM</td>
<td>Wednesday &amp; Thursday</td>
</tr>
<tr>
<td>9:00 AM – 3:00 PM</td>
<td>Friday</td>
</tr>
</tbody>
</table>

Dedicated Exhibit Time

<table>
<thead>
<tr>
<th>Time</th>
<th>Days</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00 – 11:00 AM</td>
<td>Wednesday &amp; Thursday</td>
</tr>
<tr>
<td>12:30 – 1:30 PM</td>
<td>Wednesday &amp; Thursday</td>
</tr>
<tr>
<td>3:30 – 4:00 PM</td>
<td>Wednesday &amp; Thursday</td>
</tr>
<tr>
<td>10:00 – 11:00 AM</td>
<td>Friday</td>
</tr>
<tr>
<td>12:30 – 1:30 PM</td>
<td>Friday</td>
</tr>
</tbody>
</table>

Customize your experience with the My Academy app.

• Explore the profile of more than 700 exhibitors
• Search by specific product categories and specialty areas
• View the products that will be displayed in the Product Gallery
• Create a list of your “must-see” exhibitors

Available on Android 4.1 and iOS App for iPhone 4s or later, iPad 2 or later, iPad mini or later, or iPod touch (5th gen). Note: 2019 handouts and evaluations will only be available electronically.

Dedicated Exhibit Time

Explore the Exhibit Hall without missing education sessions. Dedicated times have been set aside for attendees to view and discuss the latest technologies in orthopaedic surgery and attend product demonstrations.
The American Academy of Orthopaedic Surgeons wishes to thank the following companies for their promotional support of the AAOS 2019 Annual Meeting.

Thank You!
Annual Meeting Sponsors

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RIMASYS

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TERUMO BCT

DJO®

ONE TRAY®

WRIGHT

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Exactech®

Surgeon focused. Patient driven.™

ORTHOFIX®

ZIMMER BIOMET
Focus on Your Orthopaedic PAC

Congress is in our business. Let’s make it our business to be in theirs! As decisions on health care take place, one thing is clear: we need a strong voice in Washington, DC.

Over the last 19 years, the Orthopaedic PAC has provided us with that voice, helping AAOS achieve a number of legislative wins.

The Orthopaedic PAC represents every orthopaedic surgeon, regardless of practice type or location, we’re committed to you. We are the only national political action committee in Washington, DC solely dedicated to representing Orthopaedic Surgeons before Congress and rank as the largest physician PAC in the United States.

To learn more about AAOS’ legislative and regulatory activities and the Orthopaedic PAC, visit the AAOS Advocacy Booth located in Hall C, Booth 6039 and relax in the Winner’s Circle, our Orthopaedic PAC Donor Lounge.

Finally, don’t miss the Orthopaedic PAC Thank You Lunch, open to all current 2018-2019 donors, Wednesday, March 13, 11:30 AM – 1:30 PM. www.aaos.org/PAC.
AAOS 2019 Annual Meeting
ON DEMAND

CLAIM YOUR SPECIAL ATTENDEE DISCOUNT

ORDER DURING THE MEETING AND PAY ONLY $399*
*pricing varies by membership

Get Even More From AAOS Annual Meeting

AAOS Annual Meeting is a busy few days, and you might not be able to fit in everything you want due to networking, some sessions happening at the same time, or just not having the energy. Thankfully, the learning doesn’t have to end at the meeting—AAOS Annual Meeting On Demand is an online library with key sessions from this year’s meeting that you can watch anytime, anywhere.

AAOS Annual Meeting On Demand Features:

- Access to content within 24 hours of live presentations
- Downloadable PDFs of presentation slides and MP3s
- Online testing for continuing education credits
- A hard drive can be added for an additional $99

Order Now

aaos.ondemand.org/vegas  |  800-501-2303 (U.S. only) or 818-844-3299  |  Monday-Friday, 6am-5pm PST
Accreditation
The American Academy of Orthopaedic Surgeons is accredited by the Accreditation Council for Continuing Medical Education to provide continuing medical education (CME) for physicians.

CME Credit
U.S. Physicians: The AAOS designates this live activity for a maximum of **33 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

International Physicians: The AMA has determined that physicians not licensed in the United States but who participate in this CME activity are eligible for **AMA PRA Category 1 Credits™**.

Allied Health Professionals: The AAOS is not accredited to offer credit for nurses and other Allied Health Professionals. To determine if activities offering **AMA PRA Category 1 Credits™** are acceptable for your licensing or certification needs please contact the relevant organizations directly.

**IMPORTANT:** Please check-in as soon as you arrive.

The AAOS CME transcript system will not allow you to claim CME credit for any educational activities you participated in before you officially check-in to the meeting. For instance, you arrive at the meeting on Tuesday but do not check-in until Wednesday, you will not be able to claim CME credits for your Tuesday attendance. Also, only after checking-in will you be able to print your CME Certificate of Attendance.

<table>
<thead>
<tr>
<th>Check-In OR Register at the Meeting on:</th>
<th>Max Daily Credits:</th>
<th>Max Meeting Credits</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tuesday, March 12</td>
<td>up to 9</td>
<td>33</td>
</tr>
<tr>
<td>Wednesday, March 13</td>
<td>up to 8</td>
<td>24</td>
</tr>
<tr>
<td>Thursday, March 14</td>
<td>up to 8</td>
<td>16</td>
</tr>
<tr>
<td>Friday, March 15</td>
<td>up to 8</td>
<td>8</td>
</tr>
</tbody>
</table>

Certificate of Attendance Kiosks
Print your CME Certificate of Attendance for the AAOS and participating Specialty Societies. The kiosks are in Academy Hall, Level 1 Lobby, Hall G.

### Specialty Day CME
Listed below are the Specialty Societies designations of **AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

- **American Orthopaedic Foot and Ankle Society** – 8.25 credits
- **American Shoulder and Elbow Surgeons** – 6 credits
- **American Society for Surgery of the Hand/American Association for Hand Surgery** – 8.5 credits
- **Arthroscopy Association of North America/American Orthopaedic Society for Sports Medicine** – 7.5 credits
- **Federation of Spine Associations** – 7 credits
- **Limb Lengthening and Reconstruction Society** – 7.75 credits
- **Musculoskeletal Infection Society** – 4.5 credits
- **Musculoskeletal Tumor Society** – 6 credits
- **Orthopaedic Trauma Association** – 5.5 credits
- **The Hip Society/American Association of Hip and Knee Surgeons** – 7.5 credits
- **The Knee Society/American Association of Hip and Knee Surgeons** – 7.5 credits

**AAOS CME Transcript System**
The transcript system is an honor system. You will be able to log your CME credits into your transcripts approximately 2 weeks after the meeting. Physicians should claim only the number of credits for the learning activities at the Annual Meeting in which they actively participated.

The grid below outlines the types of activities that are available at the Annual Meeting and notes which qualify for **AMA PRA Category 1 Credit™**:

<table>
<thead>
<tr>
<th>Activity</th>
<th>CME Credit Available</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPT and ICD-10 Coding Fundamentals for Starting Your Practice #190</td>
<td>Yes</td>
</tr>
<tr>
<td>Flash Five®</td>
<td>Yes</td>
</tr>
<tr>
<td>Forum for Young Orthopaedic Surgeons with the ABOS</td>
<td>Yes</td>
</tr>
<tr>
<td>Instructional Courses</td>
<td>Yes</td>
</tr>
<tr>
<td>Orthopaedic Review Course</td>
<td>Yes</td>
</tr>
<tr>
<td>Orthopaedic Video Theater</td>
<td>Yes</td>
</tr>
<tr>
<td>Papers</td>
<td>Yes</td>
</tr>
<tr>
<td>Posters and Scientific Exhibits (only when the presenter is required to be present and during the poster tours)</td>
<td>Yes</td>
</tr>
<tr>
<td>Showdowns®</td>
<td>Yes</td>
</tr>
<tr>
<td>Specialty Day</td>
<td>Yes</td>
</tr>
<tr>
<td>Symposia</td>
<td>Yes</td>
</tr>
<tr>
<td>The Way I See It…®</td>
<td>Yes</td>
</tr>
<tr>
<td>Ask an Expert</td>
<td>No</td>
</tr>
<tr>
<td>Industry Exhibits</td>
<td>No</td>
</tr>
<tr>
<td>Practice Management Course for Residents and Fellows-in-Training #191</td>
<td>No</td>
</tr>
<tr>
<td>Speed Mentoring Program for Residents</td>
<td>No</td>
</tr>
<tr>
<td>Technology Theater</td>
<td>No</td>
</tr>
</tbody>
</table>
Disclaimer
The material presented at the Annual Meeting has been made available by the American Academy of Orthopaedic Surgeons for educational purposes only. This material is not intended to represent the only, nor necessarily best, method or procedure appropriate for the medical situations discussed, but rather is intended to present an approach, view, statement, or opinion of the faculty which may be helpful to others who face similar situations. The AAOS disclaims any and all liability for injury or other damages resulting to any individual attending a session and for all claims which may arise out of the use of the techniques demonstrated therein by such individuals, whether these claims shall be asserted by a physician or any other person.

FDA Statement
Some drugs or medical devices demonstrated at the Annual Meeting have been cleared by the FDA for specific purposes only or have not been cleared by the FDA. The FDA has stated that it is the responsibility of the physician to determine the FDA clearance status of each drug or medical device he or she wishes to use in clinical practice. Academy policy provides that “off label” uses of a drug or medical device may be described in the Academy’s CME activities so long as the “off label” use of the drug or medical device is also specifically disclosed (i.e. it must be disclosed that the FDA has not cleared the drug or device for the described purpose). Any drug or medical device is being used “off label” if the described use is not set forth on the product’s current label.

Presentation of Fraudulent Research
The Central Program Committee makes every attempt to ensure that the research activities and findings presented in the scientific program are genuine and valid. It should be understood, however, that it is not possible to vet each and every study that is presented during the Annual Meeting. The abstracts of presentations submitted for grading are rated by qualified and expert graders. In some instances, the paper presentation or poster may not reflect its related abstract submitted six months earlier. The Central Program Committee considers these instances to be errors in the presenters’ judgment when they occur. Presentation of fraudulent research violates the AAOS Mandatory Standards of Professionalism on Research and Academic Responsibilities. If you feel you have witnessed a knowingly fraudulent presentation, please address your concern to a member of the Central Program Committee or Academy staff. The Central Program Committee will review the matter and may determine to bar the submission of future abstracts from the speaker(s) and/or to publish a retraction of the abstract in AAOS Now or other AAOS publications or communications. Any AAOS member may also file a grievance against another AAOS member under the AAOS Professional Compliance Program. Based upon the recommendation of the Committee on Professionalism and, as applicable, the Judiciary Committee, the AAOS Board of Directors may determine to issue a letter of concern, or to reprimand, censure, suspend, or expel the AAOS Fellow or Member who presented the fraudulent research. For more information on the Professional Compliance Program, visit aaos.org/profcomp or call (847)384-4047.

2019 Annual Meeting Objectives

Global Objectives
- Develop and refine a perspective on the broad range of orthopaedic knowledge, care and surgical practice.
- Expand and integrate an understanding of the scientific and clinical tenets of orthopaedic surgery to better prevent and treat musculoskeletal disease.
- Develop an understanding of economic and practice management challenges that can lead to strategies that protect continued access to care for patients and viability of the profession.
- Provide a forum to strengthen professional relationships and develop networks that lead to better patient care, individual surgeon career satisfaction, and a more robust profession as a whole.

Instructional Objectives
- Facilitate a personalized educational experience through a comprehensive offering of instructional courses, symposia, and scientific presentations.
- Support a forum for discussion of current issues in orthopaedics including patient safety, advocacy, practice management, technology, and culturally competent care.
- Offer complementing formats to facilitate career-long education that meets the expectations and requirements of patients, colleagues and Maintenance of Certification.
- Provide a forum for the presentation of basic and clinical research with current as well as future potential applications in the management of patients with musculoskeletal disease or injury.

Learner Objectives
- Synthesize a basis for the practice of delivering evidence based, cost effective orthopaedic care, both patient centered and population based.
- Integrate current basic science, translational research, and state-of-the-art procedures and technology into clinical practice.
- Become more informed and involved in advocacy issues related to orthopaedics.
- Provide a forum for resident education on current clinical practice, relevant basic science, practice management, and advocacy issues in preparation for careers as competent and ethical orthopaedic surgeons.
### Attendee Policies

#### Anti-Discrimination and Anti-Harassment
AAOS prohibits harassment or discrimination in any form by or against an employee, exhibitor, vendor or attendee. The AAOS Anti-Discrimination and Anti-Harassment Policies and Procedures are available by contacting AAOS at meeting@aaos.org or at aaos.org/antiharassmentpolicy.

#### Attendee Conduct
- Selling and/or marketing activities are reserved exclusively for registered exhibitors and can only be conducted from an exhibit booth space.
- Annual Meeting attendees that plan to sell and/or market products at the Annual Meeting can only do so from an exhibit booth in the Industry Exhibit Hall. To secure a paid exhibit booth space, visit aaos.org/exhibitors for information.
- At the sole discretion of AAOS, attendees found in violation of this requirement may be escorted from the meeting and have all meeting privileges revoked without refund of fees paid.

#### Event Cancellation
Due to circumstances beyond our control, the American Academy of Orthopaedic Surgeons may elect to cancel the Annual Meeting. These circumstances may include but are not limited to disaster, severe weather, civil commotion or government laws or regulations. In the event of such cancellation, all Annual Meeting registrants will be notified by email at the address noted in the AAOS database; and registration fees will be refunded in full. Other costs incurred by the registrant, such as airline or hotel penalties, are the responsibility of the registrant.

#### Image Capture
By registering for and attending the Annual Meeting, attendees grant AAOS (and its employees and agents) permission to capture the attendees’ image, likeness, voice, and actions, whether captured live or recorded and in any format, during the Annual Meeting. AAOS may use the images for display, exhibition, publication, or reproduction in any medium or context for any purpose, including, but not limited to, commercial or promotional purposes, without further notice, authorization, or compensation.

#### Non-Smoking Policy
Smoking is not permitted in public areas such as restaurants, hotel lobbies and the Venetian/Sands Expo.

#### Privacy Policy – Use of Personal Information
Annual Meeting registration lists, including the medical registrant’s name, postal mailing address, and phone number, are available for sale to exhibitors in advance of and after the Annual Meeting.

Personal Information, including the medical registrant’s name, postal mailing address, phone number, email address, hospital affiliation and practice focus, is available to Annual Meeting exhibitors through a lead retrieval system. While registering for Annual Meeting, medical registrants may choose to opt out of the distribution of their email addresses through the lead retrieval system.

AAOS, its third party vendors or service providers may collect, store and use Personal Information to provide AAOS products and services or to improve the user experience at AAOS events and with AAOS products and services.

For additional information, please refer to the entire AAOS Privacy Policy by visiting aaos.org/privacy.

#### Private Meeting
The AAOS 2019 Annual Meeting is a private meeting. The AAOS reserves the right to control space and ask people to leave the meeting who are not qualified to attend or who cause disruptions, at AAOS’ sole discretion.

#### Refund Policy
The Academy does not issue refunds on-site during the meeting. All requests for refunds (registration, courses, track packages, and/or Specialty Day) must have been received in the Academy office on or before January 31, 2019.

#### Registration of Children Restricted
The following guidelines have been approved for the Annual Meeting. Only children 16 or over will be admitted to the educational programs, including industry exhibits.

Children and individuals of any age, providing they are not disruptive to the meeting, are welcome in the following activities:
- Posters
- Scientific Exhibits

Children under the age of 16 are not permitted in the following areas of the meeting:
- Industry Exhibits
- Paper Presentations, Symposia, Instructional Courses
- Business Meetings
- Your Academy 2019
- Presidential Guest Speaker, Frank Sesno

#### Reproduction Policy
The Academy reserves any and all of its rights to materials presented at the Annual Meeting, including Posters and Scientific Exhibits. Reproductions of any kind, by any person or entity, without prior written permission from the Academy, are strictly prohibited. Prohibited reproductions include, but are not limited to, audiotapes, videotape, and/or still photography. Persons violating this policy may have their badge confiscated and be escorted from the meeting. No unapproved surveys, handouts, or literature may be distributed at the meeting.
Safety

Emergency Numbers
Emergency number at the Venetian/Sands Expo: (702)414-9311
From a Venetian/Sands Expo house phone: 49311
For emergencies, outside of the Venetian/Sands Expo:
City Police Emergency: 911
City Police Non-Emergency: (702)828-3111
Poison Control: (800)222-1222 (Nationwide)

Nearest Hospitals
Sunrise Hospital and Medical Center..........................3.5 miles
3186 S. Maryland Pkwy. (702)731-8000
Desert Springs Hospital.............................................3.4 miles
2075 E. Flamingo Rd. (702)733-8800

First Aid at the Venetian/Sands Expo
These stations are fully equipped and staffed by licensed medical professionals and include automated external defibrillators for reviving heart attack victims.

- Room 2707 – Hours of Operation:
  Tuesday – Friday ........................................ 7:00 AM – 7:00 PM
  Saturday ........................................ 7:00 AM – 6:00 PM
- Permanent First Aid Room
- Near Room 310 – Hours of Operation:
  Tuesday – Saturday ........................................ 7:00 AM – 7:00 PM

For Your Safety - When you are outside you should:
- Get directions before leaving the hotel or restaurant.
- Take taxis or shuttles you recognize.
- Walk with another person. Single targets are the most likely victims of crime.
- Do not wear your badges or carry conference bags. Both identify out-of-towners.
- Avoid dark, isolated areas, such as closed plazas and apparent shortcuts back to the hotel.

Drug Stores
Walgreens, 3339 S. Las Vegas Blvd. (702)471-6844
(between the Palazzo & Venetian)
- Hours of Operation & Pharmacy Hours:
  Monday – Sunday ........................................ 24 hours
- Healthcare Clinic in Walgreens:
  Monday – Friday ........................................ 8:00 AM – 6:30 PM
  Saturday – Sunday ........................................ 9:30 AM – 5:00 PM

CVS, 3758 S. Las Vegas Blvd. (702)262-9028
(next to the Monte Carlo)
- Hours of Operation:
  Monday – Sunday ........................................ 24 hours
- Pharmacy Hours:
  Monday – Friday ........................................ 8:00 AM – 10:00 PM
  Saturday ........................................ 9:00 AM – 6:00 PM
  Sunday ........................................ 10:00 AM – 6:00 PM
- Minute Clinic in CVS:
  Monday – Friday ........................................ 8:30 AM – 7:30 PM
  Saturday ........................................ 9:00 AM – 5:30 PM
  Sunday ........................................ 10:00 AM – 5:30 PM

AAOS Now
The Daily Edition of AAOS Now, the official newspaper of the AAOS Annual Meeting, is published Tuesday through Friday. Pick up a copy from the newspaper racks located throughout the Venetian/Sands Expo and near the shuttle bus drop off. Each issue contains coverage of events and scientific presentations, scheduled events, and reports on guest speakers and award winners, along with late-breaking news. It’s your best source for news and information during the Annual Meeting!

AAOS Annual Meeting On Demand Sales Booth
Academy Hall, Venetian Ballroom and Level 4 Lobby
Gain access to exclusive Annual Meeting content all year long. An online library with more than 500 hours of educational content from the meeting. Revisit sessions you attended and participate in those you missed anytime, anywhere. Plus, earn up to 100 CME credits.

On-site Pricing Details
Member Attendee: $399  Non-Member Attendee: $599

- Hours of Operation:
  Tuesday – Friday ........................................ 7:00 AM – 6:00 PM
  Saturday ........................................ 7:00 AM – 1:00 PM

AAOS Disaster Preparedness Kiosk
Resource Center, Academy Hall, Venetian Ballroom
Stop by to test your knowledge on disaster preparedness and receive information on how to train and register oneself as a disaster response provider.

- Hours of Operation:
  Tuesday – Friday ........................................ 7:00 AM – 6:00 PM
  Saturday ........................................ 7:00 AM – 1:00 PM

AAOS OrthoPAC
Hall D, Booth 6039
Learn more about AAOS’ legislative and regulatory activities and the Orthopaedic PAC.

- Hours of Operation:
  Wednesday – Thursday ........................................ 9:00 AM – 5:00 PM
  Friday ........................................ 9:00 AM – 3:00 PM

Academy Lounges
Hall C Lobby, Exhibit Hall Booths 3900 and 5061
Looking for a comfortable place to explore the MyAcademy app, catch up with a colleague, or keep up with the Annual Meeting Twitter feed? Relax in one of the Academy Lounges.

ADA Needs
The Venetian/Sands Expo complies with the public accommodations requirements of the Americans with Disabilities Act (ADA).

Wheelchairs and mobile scooters are available through the following:
The Venetian and The Palazzo Resort Concierge - (866)725-2990
Scootaround – (888)441-7575 or scootaround.com
Airline Information
American Airlines..................(800)433-7300
Delta........................................(800)221-1212
United Airlines..........................(800)864-8331
Corp Trav......................................(800)318-3846

Airport Shuttle Reservation Counter
Level 1 Lobby
Shuttle service is available to and from the airport to downtown hotels for $11 one way and $20 roundtrip (per person). Reservations are required 24 hours prior to travel and ADA accessible requests are required 48 hours prior to travel.
• Hours of Operation:
  Wednesday – Saturday 9:00 AM – 5:00 PM

Allied Organization Displays
Resource Center, Academy Hall, Venetian Ballroom
• American Board of Orthopaedic Surgery – ABOS
• Orthopaedic Research and Education Foundation – OREF
Booths are staffed during the following hours:
  Tuesday – Friday 7:00 AM – 6:00 PM
  Saturday 7:00 AM – 1:00 PM

Badge Information
Badges are required for entry to all areas and are distributed with a paid registration.

Badge Letters - Category Designation
AAOS Fellow ..........................................................F
AAOS Members: Candidate, Resident, Associate, International ................................M
Industry Non-Exhibitor ..................................................I
Exhibitor..............................................................E

Badge Colors
Medical Attendee ..................................................White
Family Badge .........................................................Lavender
Industry Non-Exhibitor ........................................Orange
Exhibitor..............................................................Green
Press .................................................................Pink

Board of Councilors Booth
Resource Center, Academy Hall, Venetian Ballroom
Your elected Board of Councilors influences the direction of education, health policy, bylaws, research and more on behalf of your profession. Stop by to learn more, speak with representatives, and find out who represents you!
• Hours of Operation:
  Tuesday – Friday 7:00 AM – 6:00 PM
  Saturday 7:00 AM – 1:00 PM

Business & Package Center – FedEx Office – (702)836-4400
Level 2, near Room 2006
The center is available to serve as your full-service business center. Packing, shipping, printing, copying, equipment rental and office supplies.
• Hours of Operation:
  Tuesday – Friday 6:00 AM – 7:00 PM
  Saturday 8:00 AM – 6:00 PM

Career Center
Academy Hall, Venetian Ballroom
Provides an opportunity for employers and candidates of orthopaedic surgery positions to meet in person.
• Hours of Operation:
  Tuesday – Friday 7:00 AM – 6:00 PM
  Saturday 7:00 AM – 1:00 PM

Cash Station/ATM
ATMs are located throughout the Venetian and Palazzo Hotels and in the Sands Expo.
The following banks are in proximity to the Venetian/Sands Expo:

Wells Fargo
3800 Howard Hughes Pkwy. (702)791-6353
• Hours of Operation:
  Monday – Friday 9:00 AM – 5:00 PM

Chase
1340 East Flamingo Rd. (702)369-2090
• Hours of Operation:
  Monday – Friday 9:00 AM – 6:00 PM
  Saturday 9:00 AM – 3:00 PM

Bank of America
4080 Spring Mountain Rd. (702)654-5050
• Hours of Operation:
  Monday – Friday 9:00 AM – 5:00 PM
  Saturday 9:00 AM – 1:00 PM

Certificate of Attendance Kiosks
Academy Hall, Venetian Ballroom
Level 1 Lobby
Hall G
Print your CME Certificate of Attendance for the Annual Meeting and participating Specialty Day Societies.

Charging Stations
Academy Hall, Venetian Ballroom
Academy Lounges, Exhibit Hall Booths 3900 and 5061
Academy Lounge, Hall C Lobby
Level 2 Lobby
Hall G
Conveniently located throughout the convention center, stop by these stations to recharge your electronic devices.

Coat and Luggage Check
Level 1 Lobby
For identification, please leave a business card in your pocket.
• Hours of Operation:
  Tuesday – Saturday 6:30 AM – 6:30 PM
Exhibits
Halls A-D
• Hours of Operation:
  Wednesday – Thursday 9:00 AM – 5:00 PM
  Friday 9:00 AM – 3:00 PM

Admission
Admission to the Exhibit Hall is by badge only. Individuals under the age of 16 are not permitted in the exhibit halls.

Dedicated Exhibit Time
Explore the Exhibit Hall without missing any education sessions. The following dedicated times have been set aside for attendees to view and discuss the latest technologies in orthopaedic surgery and attend product demonstration.

<table>
<thead>
<tr>
<th></th>
<th>Wednesday</th>
<th>Thursday</th>
<th>Friday</th>
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</thead>
<tbody>
<tr>
<td>Time</td>
<td>10:00 – 11:00 AM</td>
<td>10:00 – 11:00 AM</td>
<td>10:00 – 11:00 AM</td>
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<tr>
<td></td>
<td>12:30 – 1:30 PM</td>
<td>12:30 – 1:30 PM</td>
<td>12:30 – 1:30 PM</td>
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<tr>
<td></td>
<td>3:30 – 4:00 PM</td>
<td>3:30 – 4:00 PM</td>
<td>3:30 – 4:00 PM</td>
</tr>
</tbody>
</table>

Focus Groups (invitation only)
Venetian/Sands Expo
Focus Group discussions are being held in Rooms 4709 & 4710. Those who have been invited to observe the discussion groups, please meet in Viewing Room 4701 for focus groups taking place in Room 4709 and Viewing Room 4703 for groups taking place in Room 4710. For additional details, please reference the My Academy App.

• Hours of Operation:
  Tuesday 12:00 – 1:30 PM
  Wednesday 12:00 – 1:30 PM
  Thursday 12:00 – 1:30 PM

Food Service
There are ample food and beverage concession areas located throughout the Venetian/Sands Expo for convenient walk up service. Check your My Academy App for specific locations and menu options.

Forum for Young Orthopaedic Surgeons with the American Board of Orthopaedic Surgery (ABOS)
Thursday, 11:00 AM – 12:30 PM, Room 3301
This free annual forum provides senior residents and new practitioners a unique opportunity to meet informally with David F. Martin, MD, Executive Medical Director of the ABOS. Dr. Martin will provide you with insightful information about Board requirements and procedures. This special program is a “must attend,” as it answers your questions about this important step in your career. If you are looking to take the ABOS Part I or Part II Examinations in the near future, you should not miss this forum.

Guest Nation - AAOS Welcomes the Republic of Korea
Help us welcome the Republic of Korea as the Guest Nation and visit their exhibit in Academy Hall. Look for special events and activities including a collaborative symposium, featured posters and poster tours.

Handouts & Evaluations – Electronic Only
Annual Meeting handouts and evaluations are only available electronically.

Each Symposium and Instructional Course provides an electronic evaluation form. The contribution of your evaluation is critical and essential. Evaluations are reviewed by the committees and are used to determine the curriculum that helps us maintain the high standards expected by those attending the Annual Meeting.

• Handout Access: My Academy App or Registration Resources Website
• Evaluation Access: My Academy App

Handouts will be available one week prior to the start of the meeting. Evaluations will be available the first day of the meeting.

Hotel Reservations – 2020 Annual Meeting
AAOS Members attending this year’s Annual Meeting can make “EARLY” hotel reservations for the 2020 Annual Meeting in Orlando. Stop by the Housing Help Desk outside Academy Hall, in the Venetian Ballroom Lobby, or the Internet Connections kiosk located inside Academy Hall.

Housing Help Desk
Venetian Ballroom Lobby
Visit the Housing Help Desk if you experience any problems with your reservation or room.

• Hours of Operation:
  Monday 2:00 – 6:00 PM
  Tuesday – Friday 7:00 AM – 6:00 PM
  Saturday 7:00 AM – 1:00 PM

Instructional Course Lecture Ticket Exchange
Physician Registration, Hall G
Individual tickets purchased in advance may be exchanged for the same type ticket (for example an ICL for an ICL) at the Ticket Sales counter. There are no exchanges available for the Education Specialty Tracks. The registrant must pay the difference between the advance purchase price and the on-site purchase price to exchange a ticket.

International Business Office
Room 3701
Academy Staff are available to assist you with inquiries. For membership inquiries, please visit the membership desk in the Resource Center, Academy Hall, Venetian Ballroom.

• Hours of Operation:
  Tuesday – Friday 7:00 AM – 6:00 PM
  Saturday 7:00 AM – 1:00 PM

International Groups Department
Physician Registration, Hall G
Hotel and registration assistance is available to international guests who used this service.
**International Surgeons Lounge**
Room 3702
We invite surgeons visiting the U.S. to come and relax, meet with other international colleagues, and browse information on AAOS international activities. Refreshments (coffee, tea, and water) are provided.

- **Hours of Operation:**
  - Tuesday – Friday: 7:00 AM – 6:00 PM
  - Saturday: 7:00 AM – 1:00 PM

**Internet Connections**
Academy Hall, Venetian Ballroom
This “all-in-one” station allows you to utilize key connections such as:
- 2019 Exhibitor Directory
- 2020 Member Housing
- Email sites
- Flight check-in

**Lactation Room**
Room 2805
A small, private room is available for nursing mothers, offering comfortable seating and convenient access to power. Accommodations for this secure space can be made in the Academy Headquarters Office, Room 2601.

Additional lactation area available at:
- Mamava Lactation Pod, Level 2 Lobby (located near the Co-Working Lounge)

**Lost & Found**
Sands Security Podium, Sands Lower Lobby (near Hall G)
- **Hours of Operation:** 24 hour

**Media Training**
From Insights to Sound Bites: Your Orthopaedic Expertise and the News Media #701
Friday, March 15, 8:00 AM – 12:00 PM, Room 4505
Feel more confident and learn to make the most of every media encounter and public presentation. Participants will gain an understanding of how the news media works. In this fast-paced, interactive session, you’ll learn the keys to a successful interview and the ways to best present your most important information in any discussion. Ticket is required.

This session is limited to 15 attendees and is offered on a first-come, first-served basis to all active, U.S.-based AAOS Fellows, Candidate Members and Emeritus Fellows.

**My Academy App**
The Annual Meeting My Academy App is available free from the App Store or Google Play. View, search, and schedule all educational opportunities, Exhibitor information, Committee and Affiliate Meetings, and Special Events. You may even add personal events to your schedule to help you stay organized and make the most of your time at the Annual Meeting. Maps for meeting room locations and exhibiting companies within the Venetian/Sands Expo are also included. You may browse or search the list of attendees and use the messaging feature within the app to help you connect with colleagues. The app also includes a business card exchange to help you stay in touch with new connections. Need some assistance? Visit the help desk located in the Resource Center in Academy Hall, Venetian Ballroom.

**Nursing and Allied Health Program**
NUR 1 - 4, Room 2204
CAST 1 & 2, Room 310
AAOS, the National Association of Orthopaedic Nurses (NAON), and the National Association of Orthopaedic Technologists (NAOT) have collaborated to develop this program. To attend any of these courses, you need to register for the AAOS Annual Meeting and purchase a ticket for each course. The Annual Meeting on-site registration fee is $500.

Tickets for the NUR courses are $150 per course. Tickets for the CAST courses are $220. A complete listing of the courses can be found on pages 215-218.

**Offices**
Academy Headquarters Room 2601 (702) 691-7816
Exhibits Office Room 2701 (702) 691-7812
International Business Office Room 3701 (702) 691-7834
Media Briefing Room 3602 No Telephone
Newspaper Office Room 3610 (702) 691-7838
Press Office Room 3609 (702) 691-7839
Speaker Ready Rooms Room 2403 (702) 691-7846
Room 4610 (702) 691-7847

**Parking**
The Venetian and Palazzo Hotels offer free valet parking. Parking is abundant on the Strip and downtown Las Vegas in hotel lots or parking garages. Virtually every major hotel offers valet parking, prices vary. It’s customary to tip valets $2 when they retrieve your car.

**Prayer Room**
Room 3801
AAOS provides this dedicated room for the purposes of meditation and quiet prayer.
- **Hours of Operation:**
  - Tuesday – Friday: 7:00 AM – 6:00 PM
  - Saturday: 7:00 AM – 5:30 PM

**Redemption Centers**
Booths 362, 5068, and 6857
Visit the Redemption Centers to pick up a complimentary tote bag and AAOS T-shirt. Enter to win an iPad, GoPro camera, and more! Check your registration packet for special coupons, redeemable exclusively at AAOS Redemption Centers.
- **Hours of Operation:**
  - Wednesday – Thursday: 9:00 AM – 5:00 PM
  - Friday: 9:00 AM – 3:00 PM
Registration
Hall G
• Hours of Operation:
  Monday .......................................................... 2:00 – 6:00 PM
  Tuesday – Friday ........................................... 7:00 AM – 6:00 PM
  Saturday ..................................................... 6:30 AM – 1:00 PM

Fees:
Members in good standing:
AAOS Fellow, Candidate, Resident, Associate, International, International Resident ......................... $250
Annual Meeting Official Speaker ......................................... No Fee
Annual Meeting Official Co-Author ..................................... $250
U.S. Non-Member Physician ............................................. $1,525
Non-Physician .................................................................. $1,100
Exhibitor Research & Development Personnel .................. $1,100
International Non-Member Medical Attendee ...................... $975
U.S. Non-Member Fellow-in-training ................................. $250
U.S. Non-Member Resident-in-training ............................... $250
U.S. Allied Health: Must work in an orthopedic practice or institution and provide hands on patient care.
For example: RN, LPN, NP, PA, PA-C, ATC, CTO, CST, OTC, DPT, PT. .................................................. $500
U.S. Orthopaedic Practice Staff: Must work in an orthopedic practice or institution and provide patient services. This category includes: practice administrator, office manager, office assistant, medical records and insurance billing and coding staff. ........................................ $500
U.S. Career Center approved participant
(limited to hiring employers who also have a active Career Center listing on AAOS website) ......................... $500

Rental Cars
AAOS has negotiated special rates for rental cars during the meeting. Reservations can be made directly with the rental car company, use the discount code listed below:

<table>
<thead>
<tr>
<th>Company</th>
<th>Meeting Code</th>
<th>Phone</th>
<th>Website</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hertz</td>
<td>CV#02KS0024</td>
<td>(800)654-2240</td>
<td><a href="http://www.hertz.com">www.hertz.com</a></td>
</tr>
<tr>
<td>Avis</td>
<td>AWD#J095822</td>
<td>(800)331-1600</td>
<td><a href="http://www.avis.com">www.avis.com</a></td>
</tr>
</tbody>
</table>

Resident Assembly Open Forum
Wednesday, 10:00 – 11:00 AM, Room 904
All residents are invited to attend the forum to discuss proposed advisory opinions to be brought before the Resident Assembly the following day. An advisory opinion is defined as an initiative, opportunity, or stance taken on resident issues. Residents have the chance to present advisory opinions they have sponsored, and discuss advisory opinions proposed by other residents and educational programs. This is an exciting opportunity for residents to make a difference in the AAOS.

NEW! Speed Mentoring for Residents #390
Thursday, 8:00 – 9:30 AM, Room 3301 (no CME credit)
Learn how to navigate the transition from residency to practicing physician from the pros. This free session will focus on guidance of the practical and the intangibles you need to start your next phase of your career in a successful manner. Ticket required.

Sponsored by:

Resident Assembly Business Meeting – Get Involved!
Thursday, 1:30 – 3:30 PM, Room 3301
All residents are invited to attend. The primary purpose of the Resident Assembly is to serve as an advisory body to the AAOS on issues of importance to orthopaedic residents. This is your opportunity to contribute to AAOS and towards your own professional advancement. Join a committee or become a delegate at aaos.org/residents, and let your voice be heard!

The Resident Bowl
Thursday, 4:00 – 6:00 PM, Palazzo Ballroom P
An exciting opportunity for residents to compete against one another in a game-style setting to test their knowledge in orthopaedics, orthopaedic history, and non-orthopaedic trivia. Prizes are awarded to the top two teams. A limited number of residents can sign up on-site. All are welcome to be in the audience and cheer for their colleagues.

Sponsored by:

Resident Education Forum
Friday, 10:00 – 11:00 AM, Room 904
Orthopaedic residency programs across the country are faced with achieving the same educational objectives, such as OITE and Board prep, weekly lecture series, and surgical skills training. Join us to help improve resident education and share best practices for shaping the future of orthopaedic resident education.

AAOS Resource Center
Academy Hall, Venetian Ballroom
Visit the AAOS Resource Center to consult with experienced Academy staff and partners who answer your questions and walk you through the expanding selection of career and practice resources with programs from this meeting available for purchase. Find assistance navigating the AAOS meeting and content apps, and learn about AJRR and the expanding AAOS registries portfolio. Meet your education and changing MOC needs with journals, publications, courses, and self-assessment with the ABOS also present and ready to answer questions. Discover interactive CME activities on AAOS’ new online learning platform and the new Orthopaedic Video Theater!

In addition to Academy education and practice resources, discuss legislative and regulatory issues confronting musculoskeletal care with members of the Office of Government Relations, and understand orthopaedic issues impacting your state with representatives from the Board of Councilors.

• Hours of Operation:
  Tuesday – Friday ........................................... 7:00 AM – 6:00 PM
  Saturday ..................................................... 7:00 AM – 1:00 PM
Restaurant Concierge Booth
Venetian Ballroom Lobby
Concierge services team members are available to assist you in selecting restaurants and evening entertainment venues during your stay in Las Vegas.

• Hours of Operation:
  Tuesday – Friday ..................................... 8:00 AM – 6:00 PM
  Saturday ................................................ 8:00 AM – 1:00 PM

Ribbons
If you did not receive your participant/volunteer ribbon(s) in advance, please stop by the Ribbon Counter located in Registration, Hall G. Volunteers serving within the volunteer governance structure will receive their ribbons from their staff liaisons.

Shuttle Bus
Shuttle bus service to and from Venetian/Sands Expo is available to guests staying at official AAOS hotels. For complete details see the My Academy App.

• Hours of Operation:
  Tuesday - Friday: ..................................... 6:30 AM – 6:30 PM
  Saturday: ............................................... 6:30 AM – 6:00 PM
  (No Service between 10:00 AM – 3:00 PM)

Items left on the shuttles will be turned in to the Academy Headquarters Office, Room 2601.

Social Media
Follow AAOS on our member- and patient-facing social media channels. We share education, research, and updates from the Academy, as well as consumer-friendly news and resources you can share with your patients.

Academy Executive Leadership Team
Chief Executive Officer .................... Thomas E. Arend, Jr, Esq, CAE
Chief Operating Officer ...................... Dino Damalas, MBA
Chief Education Strategist .................. Anna Troise, MBA
Chief Membership Officer ............... Jennifer Wolff Jones, MBA, CAE
Chief Human Resources Officer ........... Laura Abrahams
Medical Director ............................. William O. Shaffer, MD

Senior Leadership Team
Chief Information Officer ...................... Paul Haisman, MBA
Chief Marketing & Communications Officer .... Tony Priore, MS
Chief Quality & Registries Officer .......... Nathan Giusenkamp, MA
Director, Business Development .............. Sara Estes
Director, Clinical Quality & Value ............. Jayson Murray, MA
Director, Conventions & Exhibits ............ Susan McSorley
Director, Finance ............................... Tina Slager, CPA, MBA
Director, Governance ......................... Donna Malert, CAE
Director, Office of Government Relations ... Graham Newson, MA
Director, Online Learning & Assessments .............. Brian Moore
Director, Publishing Partner Relationships ... Hans Koelsch, PhD
Director, Registries ............................ Kristina Finney, MPH
Director, Society Management Services .... Amy Sherwood, CAE
Director, Strategic Planning and Performance Management ........... Todd Applebaum, MBA
General Counsel ................................. Melissa Young, JD
Senior Manager, Content Strategy and Portfolio Management .......... Courtney Dunker, MA, PMP, CSM
Senior Manager, Course Operations and Practice Resources .............. Paul Zemaitis, MPH
Senior Manager, Integrated Operations ........... Thomas James
Senior Manager, Member Engagement ... Erin Volland, MPA, CAE
Senior Manager, Membership Operations & Data Management ........... Spencer Zepelin

Speaker Ready Rooms 2403 & 4610
• Hours of Operation:
  Monday ................................................. 2:00 – 6:00 PM (Room 2403 only)
  Tuesday – Friday ..................................... 6:30 AM – 6:00 PM
  Saturday ................................................ 6:00 AM – 5:30 PM

Specialty Day
Saturday, Venetian/Sands Expo
Refer to the listing on page 32.

Taxi Service and Ride Share at the Venetian/Sands Expo
The taxi and ride share drop-off and pick-up areas are located at the outside lobby of the Sands Expo near Hall G.

Wi-Fi
Wireless Internet access – at no charge – is available throughout the convention center lobbies, meeting rooms, Academy Hall, Ask an Expert, Innovation Theater, Technology Theater, and the Exhibit Hall food service areas.
# Shuttle Bus Schedule

**Venetian/Sands Expo – March 12 - 16**

<table>
<thead>
<tr>
<th>DAY</th>
<th>Tuesday March 12</th>
<th>Wednesday March 13</th>
<th>Thursday March 14</th>
<th>Friday March 15</th>
<th>Saturday March 16</th>
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</thead>
<tbody>
<tr>
<td>HOTEL</td>
<td>6:30 AM – 10:00 AM</td>
<td>6:30 AM – 10:00 AM</td>
<td>6:30 AM – 10:00 AM</td>
<td>6:30 AM – 10:00 AM</td>
<td>6:30 AM – 10:00 AM</td>
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<td>3:00 PM – 6:30 PM</td>
<td>3:00 PM – 6:30 PM</td>
<td>3:00 PM – 6:30 PM</td>
<td>3:00 PM – 6:30 PM</td>
<td>3:00 PM – 6:00 PM</td>
</tr>
<tr>
<td>AIRPORT</td>
<td>No Service</td>
<td>8:00 AM – 6:30 PM</td>
<td>8:00 AM – 6:30 PM</td>
<td>8:00 AM – 6:30 PM</td>
<td>8:00 AM – 6:00 PM</td>
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</table>

No Service between 10:00 AM – 3:00 PM

## ROUTE

<table>
<thead>
<tr>
<th>ROUTE</th>
<th>HOTEL</th>
<th>BOARDING LOCATION at HOTEL</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Aria</td>
<td>Aria Tour Lobby</td>
</tr>
<tr>
<td>2</td>
<td>Bellagio</td>
<td>Tour Bus Lobby</td>
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<tr>
<td>2</td>
<td>Caesars Palace</td>
<td>The Colosseum</td>
</tr>
<tr>
<td>1</td>
<td>Cosmopolitan</td>
<td>Tour Bus Lobby</td>
</tr>
<tr>
<td>5</td>
<td>Encore</td>
<td>Tour Bus Curb</td>
</tr>
<tr>
<td>6*</td>
<td>Linq</td>
<td>Tour Bus Lobby</td>
</tr>
<tr>
<td>4</td>
<td>Mirage</td>
<td>North Valet</td>
</tr>
<tr>
<td>*Walk</td>
<td>Palazzo</td>
<td>.28 Miles / 7-Minute Walk</td>
</tr>
<tr>
<td>4</td>
<td>Treasure Island</td>
<td>Mirage North Valet</td>
</tr>
<tr>
<td>3*</td>
<td>Tropicana</td>
<td>North Entrance Porte Cochere</td>
</tr>
<tr>
<td>5</td>
<td>Trump</td>
<td>Main Entrance Curb (Street Level)</td>
</tr>
<tr>
<td>1</td>
<td>Vdara</td>
<td>Aria Tour Lobby</td>
</tr>
<tr>
<td>*Walk</td>
<td>Venetian / Venezia</td>
<td>.28 Miles / 7-Minute Walk</td>
</tr>
<tr>
<td>*Walk</td>
<td>Wynn Las Vegas</td>
<td>.32 Miles / 10-Minute Walk</td>
</tr>
</tbody>
</table>

*Express Shuttle Service to/from Sands Expo

- Walk to Hotel

**Wheel Chair Accessible Vehicle:** Call (424)286-0863 and allow (1) Hour for service

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### Airport Shuttle Reservation Counter

**Level 1 Lobby**

Shuttle service is available to and from the airport to downtown hotels for $11 one way and $20 roundtrip (per person). Reservations are required 24 hours prior to travel and ADA accessible requests are required 48 hours prior to travel.

- **Hours of Operation:**
  
  Wednesday – Saturday.............................9:00 AM – 5:00 PM

### Parking

The Venetian and Palazzo Hotels offer free valet parking. Parking is abundant on the Strip and downtown Las Vegas in hotel lots or parking garages. Virtually every major hotel offers valet parking, prices vary. It's customary to tip valets $2 when they retrieve your car.

### Taxi Service and Ride Share at the Venetian/Sands Expo

The taxi and ride share drop-off and pick-up areas are located at the outside lobby of the Sands Expo near Hall G.
Guest Nation Republic of Korea

Help us welcome the Republic of Korea as the Guest Nation at the AAOS 2019 Annual Meeting. Please stop by the Guest Nation exhibit located in Academy Hall to learn more about the accomplishments of the Korean orthopaedic community.

Look for special events and activities including a collaborative Symposium J that will be held on Wednesday at 4:00 PM special Guest Nation poster sessions, ten featured Posters from Korea and remarks by the Korean Orthopaedic Association (KOA) during Your Academy 2019 on Thursday at 10:30 AM.

The Guest Nation Reception (invitation only) is sponsored by:

EMPLOYERS: Build and staff your practice
Find options to advertise your open positions, meet with potential candidates, and schedule and conduct interviews. Learn about the many enhancements to the online Career Center as well!

JOB SEEKERS: Find the right practice and launch your career
Benefit from opportunities to meet with recruiters, view and search career postings on the Bulletin Boards, access job search resources on the online Career Center, and much more.

NEW! Career Coaching
Receive assistance with creating and improving professional goals and overcoming obstacles. Gain interview tips and techniques, and contract coaching.

FREE CV Consultations
Make an appointment for a one-on-one consultation to update and improve your CV!

Visit the AAOS Career Center
Academy Hall, Venetian Ballroom

Academy Hall, Venetian Ballroom
Tuesday – Friday: 7:00 AM to 6:00 PM
Saturday: 7:00 AM to 1:00 PM
Online at: www.aaos.org/careercenter
Contribute to the Advancement of Orthopaedics

Share your research with orthopaedic surgeons from around the world at the AAOS 2020 Annual Meeting. Nowhere else will your discoveries reach such a wide-ranging orthopaedic audience.

Call for Abstracts opens April 1
Submit your research at aaos.org/abstracts

Deadline Dates:

May 1, 2019
Application for Instructional Course Lecture and Symposium

June 3, 2019
Abstract for Paper and Poster Presentation

July 15, 2019
Abstract for Orthopaedic Video Theater
ACADEMY MEMBERSHIP
AAOS Members Gain Support for a Lifetime of Success

At every stage of your career, the Academy supports you with exceptional programs and resources to propel your practice, elevate your knowledge, and drive you to the highest levels of quality performance. Academy membership helps you:

- **Build your knowledge** as you learn from leading minds in orthopaedic surgery and trauma care
- **Improve your practice proficiency** by accessing the extensive array of educational resources to improve your patient care
- **Advance your research agenda** while building your professional reputation
- **Integrate the highest quality surgical practices** with resources such as Clinical Practice Guidelines, Appropriate Use Criteria and Patient Safety Tools
- **Extend your professional network** by connecting with peers and experts around the world to gain insights, refine your skills and build camaraderie

ACADEMY BENEFITS

Here are just a few of the most valued benefits included in Academy membership:

**JAAOS, JAAOS Global Research & Reviews**
Read the most authoritative, peer-reviewed journal covering leading-edge clinical advances and research

**Specialist Resources**
Gain discounted access to educational and self-assessment resources for all orthopaedic specialties at [aaos.org/education](http://aaos.org/education)

**Orthopaedic Video Theater**
Get free access to our newly expanded Orthopaedic Video Theater with nearly 700 surgical technique and user-submitted videos at [video.aaos.org](http://video.aaos.org)

**Online Education**
View hundreds of new surgical techniques learning modules at [learn.aaos.org](http://learn.aaos.org)

ACADEMY SUCCESS

Join the American Academy of Orthopaedic Surgeons today for a lifetime of success!

Academy membership is open to U.S. and internationally trained orthopaedic surgeons, and to certified Physician Assistants practicing in the U.S. and Canada.

Visit the **Membership Booth in Academy Hall**, Venetian Ballroom
Tuesday - Friday: 7:00 AM - 6:00 PM, Saturday: 7:00 AM - 1:00 PM
Learn more at [aaos.org/member/AnnMtg](http://aaos.org/member/AnnMtg)
We are defining a new strategic direction.

EXPERIENCE
Deliver a personalized and seamless member experience.

QUALITY
Equip members to thrive in value-based environments and advance the quality of orthopaedic care.

CULTURE
Evolve the culture and governance of AAOS’s board and volunteer structure to become more strategic, innovative, and diverse.

The trusted leaders in advancing musculoskeletal health.

Learn more at AAOS.org/StrategicPlan
The American Academy of Orthopaedic Surgeons gratefully acknowledges the following companies, organizations and individuals for their financial support of AAOS programs and projects throughout 2018 and at the 2019 Annual Meeting.

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As of February 05, 2019

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As of February 05, 2019

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Specialty Day Preliminary Program
Available online at aaos.org/specialtyday

Extend your Annual Meeting Experience at Specialty Day
Saturday, March 16 | Venetian/Sands Expo

Earn additional CME and connect with professionals who share your specialty interest. Exchange experiences and ideas while learning about the latest developments to ensure superior patient care with special programming presented by organizations that are members of the Board of Specialty Societies (BOS). Those organizations include:

**American Orthopaedic Foot & Ankle Society**
Room 4101
7:00 AM – 4:45 PM
*8.25 AMA PRA Category 1 Credits™*

**Limb Lengthening and Reconstruction Society**
Room 3201
8:00 AM – 5:15 PM
*7.75 AMA PRA Category 1 Credits™*

**American Shoulder and Elbow Surgeons**
Room 3101
7:55 AM – 3:05 PM
*6.0 AMA PRA Category 1 Credits™*

**Musculoskeletal Infection Society**
Room 3301
8:00 AM – 12:45 PM
*4.5 AMA PRA Category 1 Credits™*

**American Society for Surgery of the Hand/American Association for Hand Surgery**
Room 4401
7:30 AM – 5:30 PM
*8.5 AMA PRA Category 1 Credits™*

**Musculoskeletal Tumor Society**
Room 3304
8:00 AM – 3:30 PM
*6.0 AMA PRA Category 1 Credits™*

**Orthopaedic Trauma Association**
Room 4301
7:25 AM – 4:45 PM
*5.5 AMA PRA Category 1 Credits™*

**Arthroscopy Association of North America/American Orthopaedic Society for Sports Medicine**
Palazzo Ballroom F
7:00 AM – 3:15 PM
*7.5 AMA PRA Category 1 Credits™*

**Federation of Spine Associations**
- American Spinal Injury Association
- Cervical Spine Research Society
- North American Spine Society
- Scoliosis Research Society
Room 3401
8:00 AM – 4:49 PM
*7.0 AMA PRA Category 1 Credits™*

**The Hip Society/American Association of Hip and Knee Surgeons**
Room 2101
7:55 AM – 5:35 PM
*7.5 AMA PRA Category 1 Credits™*

**The Knee Society/American Association of Hip and Knee Surgeons**
Room 2201
7:55 AM – 5:35 PM
*7.5 AMA PRA Category 1 Credits™*

You must be registered for Annual Meeting to attend Specialty Day.

**AAOS Salutes the….**

**American Orthopaedic Foot & Ankle Society**
50th Anniversary

**American Association of Orthopaedic Executives**
50th Anniversary
Educational Programs

Make the most of your experience with dynamic learning formats that will propel your practice and heighten your mastery
From membership, education and career services to quality, research and advocacy, the solutions, actions and resources included with your membership are gathered in one place. AAOS staff are on hand to help you navigate everything the meeting has to offer.

**Membership**
Your AAOS membership offers many benefits – are you using them all? Membership specialists will help you realize the full value of your benefits. Learn how AAOS can help you throughout your career to achieve lifelong success. Find new ways to get connected and involved; update your contact information. And, tell us what you think!

**Career Center**
Take advantage of career services that provide you with CV review, tips for a successful job search, tools to prepare for an interview, and resources to negotiate physician employment contracts. Take the opportunity to receive a professional headshot photo, visit Booth 5231 in the exhibit hall.

**Customize your meeting with the My Academy app**
View, search, and schedule your favorite educational sessions, must-see industry exhibits, special events, and personal engagements to make the best use of your time. Need assistance? Visit the mobile app support desk located in the Resource Center.

**Education**
Learn at your own pace with these self-directed learning opportunities.

**Scientific Exhibits**
Witness 88 exhibits of in-depth and interactive graphic illustrations of studies and complex procedures with audiovisual, presenter interaction, plus enhancements that enrich your learning experience.

**Self-Assessment Examinations**
Explore self-assessment examinations in a broad range of topics relevant to your practice and patient care. Meet your MOC requirements and goals.

**CME Courses**
Browse upcoming didactic, review and hands-on skills courses and meetings from the Academy and around the world.

**Posters**
Walk through more than 1,000 posters of the latest medical, clinical, and scientific research. View at your convenience in two sessions.

**Session #1** Tuesday – Wednesday
**Session #2** Thursday – Saturday

**AAOS Online Learning Platform**
Explore interactive learning tools and activities that test your knowledge and hone your skills through microlearning lessons, self-assessment, videos, on demand modules and more.
Registries & Quality
The AAOS family of registries has expanded beyond the American Joint Replacement Registry (AJRR) and now includes shoulder and elbow. Stop by for a demonstration of RegistryInsights™ and our patient-reported outcomes platform.

Board of Councilors
Your elected Councilors influence the direction of education, health policy, bylaws, research and more on behalf of the orthopaedic profession. Learn what the BOC can do for you and find out who represents you in your state!

Advocacy
Learn more about the Office of Government Relations’ work to support your specialty on legislative and regulatory issues confronting musculoskeletal care, and how you can get involved with advocacy efforts.

Practice Management
- OrthoInfo Help patients and their families be better informed with OrthoInfo. The website features more than 400 easy-to-understand articles and videos on common orthopaedic problems, surgical and nonsurgical treatments, injury prevention, and healthy living—and all content can be easily viewed on a phone or tablet.
- Coding & Reimbursement Improve reimbursement in the ICD-10 environment with AAOS coding resources, programs, and apps. Consult with AAOS coding experts on site!
- Member Advantage Program – Student Loan Refinancing Save thousands by refinancing! AAOS members receive an exclusive rate discount with approved refinancing from the Academy’s program partner, SoFi.

Publications
Explore AAOS books, publications, JAAOS, JAAOS Research and JAAOS Global Research & Reviews now available through the Academy’s publishing partner Wolters Kluwer.

American Board of Orthopaedic Surgery (ABOS)
Understand your Board Certification options, determine your Maintenance of Certification progress, clarify your requirements and how to fulfill them. Learn about the new ABOS Web-Based Longitudinal Assessment and participate in a hands-on demonstration.

Orthopaedic Research and Education Foundation (OREF)
Explore current grant opportunities, see how research impacts patient care, and learn how you can make more research possible.

Orthopaedic Video Theater
View the vast and growing collection of expert, quality surgical videos at video.aaos.org — now FREE as a benefit of AAOS membership!

The newly expanded OVT now includes dynamic orthopaedic videos from more diverse perspectives, including globally renowned experts, leading institutions, industry, and user-submitted videos—adding increased variety to your learning.

Enhanced video collection is a FREE benefit of AAOS membership.

AAOS Welcomes the Republic of Korea as 2019 Guest Nation
Look for special events and activities including a co-branded symposium, featured poster tours, a Guest Nation booth highlighting Korean orthopaedics and more!

Never miss a session with AAOS 2019 Annual Meeting On Demand
The learning doesn’t have to end at the meeting—AAOS Annual Meeting On Demand is an online library with key sessions from this year’s meeting that you can watch anytime, anywhere. Claim your special attendee discount in Academy Hall.
Create a Unique Experience Customized to

From relevant best practices to emerging trends, the AAOS Annual Meeting provides an unparalleled career-advancing educational experience.

Ticketed Opportunities:

- **Instructional Course Lectures**: Master in-depth experience-based orthopaedic techniques and solutions from world-renowned faculty.
- **Case Presentation Courses**: Engage in collaborative table discussions, review case data, and hear the final solution with references to support the selected treatment.
- **Technical Skills Courses**: Focus on positioning, approach, and step-by-step technical tips via edited videos; followed by discussion on the pearls.
- **Orthopaedic Review Course**: Prepares you for the board exam with reviews on current knowledge of diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective.

**Allied Health Program**
The National Association of Orthopaedic Nurses, the National Association of Orthopaedic Technologists, and the AAOS worked in collaboration to bring forth world-class programming designed for orthopaedic nurses and technologists.

**Instructional Course Tickets**
Visit registration in Hall G to purchase tickets.

- Instructional Course Lecture (ICL) $70.00
- ICL U.S. Orthopaedic Resident $25.00
- Course 192 $80.00
- Case Presentation Courses $95.00
- Orthopaedic Review Course 490 (electronic handout) $450.00
- Orthopaedic Review Course 490P (printed handout) $550.00
- Orthopaedic Review Course 490 (electronic handout – U.S. Resident) $250.00
- Orthopaedic Review Course 490 (printed handout – U.S. Resident) $350.00
- Casting and Splinting Courses: CAST1-2 $220.00
- Nursing Courses: NUR 1-4 $150.00

Persons who have registered in advance but wish to exchange a ticket may do so if neither course has taken place. Persons exchanging tickets must pay the difference between the advance ticket fee and the on-site fee.

Included in your registration:

- **Career Development Courses**: Advance or refine your career with themed curriculum including: Leadership, Teaching, Communication, Research, Education, and Marketing.
- **Paper Presentations**: Explore new and exciting research and advances in orthopaedics. More than 850 papers will be presented.
- **Symposia**: Gain a balanced perspective as a panel of surgeons share leading edge research shaping changes in practice.
- **Scientific Exhibits**: Witness in-depth and interactive graphic illustrations of a study or complex procedures. 88 exhibits offer audiovisual, presenter interaction, and other enhancements to enrich your learning experience. The authors are invited to present at 11:30 AM – 12:30 PM, Wednesday – Friday. View details beginning on page 342.

**ePosters and eScientific Exhibits**
Interactive video presentations of research to illustrate a study or procedure. Visit the kiosks in Academy Hall for access to ePosters and eScientific Exhibits.

**Orthopaedic Video Theater**
View hundreds of high quality and peer-reviewed surgical technique videos from accomplished surgeons and innovators. Enjoy unlimited viewing at your convenience, Tuesday - Saturday in Academy Hall. View details beginning on page 219.

**Award Winning Presentations**

- Adult Reconstruction Hip
- Adult Reconstruction Knee
- Foot and Ankle
- Hand and Wrist
- Musculoskeletal Oncology
- Pediatrics
- Shoulder and Elbow
- Sports Medicine
- Trauma

24 self-service stations are available for you to view any Orthopaedic Video Theater title on the AAOS Access app.
Posters

Observe over 1,000 visual presentations of the latest medical, clinical, or scientific research; and are often multicenter or multidisciplinary studies, exciting new research, or a follow up to a previous study.

NEW! Two Poster Sessions offer twice as many presentations

Poster Session I, Tuesday – Wednesday
Poster Session II, Thursday – Saturday

The poster presenter and/or co-authors are invited to present daily between 11:30 AM and 12:30 PM. Special focus posters include those by Board of Specialty Societies, and the Guest Nation on display Tuesday - Saturday. View details beginning on page 233.

Posters are grouped in the following classifications:

POSTER SESSION I, TUESDAY – WEDNESDAY
- Adult Reconstruction Hip P0001-P0075
- Adult Reconstruction Knee P0076-P0155
- Foot and Ankle P0156-P0175
- Hand and Wrist P0176-P0195
- Musculoskeletal Oncology P0196-P0210
- Pediatrics P0211-P0240
- Practice Management/Rehabilitation P0241-P0270
- Shoulder and Elbow P0271-P0335
- Spine P0336-P0390
- Sports Medicine P0391-P0450
- Trauma P0451-P0500
- Guest Nation – Republic of Korea P1001-P1010
- Board of Specialty Societies P1011

POSTER SESSION II, THURSDAY – SATURDAY
- Adult Reconstruction Hip P0501-P0575, P1012
- Adult Reconstruction Knee P0576-P0655
- Foot and Ankle P0656-P0675
- Hand and Wrist P0676-P0695
- Musculoskeletal Oncology P0696-P0710
- Pediatrics P0711-P0740
- Practice Management/Rehabilitation P0741-P0770
- Shoulder and Elbow P0771-P0835
- Spine P0836-P0890
- Sports Medicine P0891-P0950
- Trauma P0951-P1000
- Guest Nation – Republic of Korea P1001-P1010
- Board of Specialty Societies P1011

Make the most of your experience with dynamic learning formats.

Ask an Expert
Present your complex case challenges to expert faculty to receive diagnosis and recommendations for future cases. Presentations take place Wednesday through Friday in the Exhibit Hall C, Booth 4300. View schedule on page 359.

Flash Five®: What’s Coming Down the Pike?
Hear critical takeaways on hot topics during fast and focused 5-minute presentations. View details on page 39.

New! Innovation Theater
Attend live demonstrations of innovative products, services, and solutions showcased by medical and technology professionals. Presentations take place Wednesday through Friday in the Exhibit Hall, Hall B, Booth 3032. View schedule on page 356.

Poster Tours
Offer a unique way to view the best posters, ask questions, and gain expert insight. Each tour takes place in the Poster Theater in Academy Hall and is guided by an expert in the field highlighting key learnings. View schedule on page 41.

Spanish Only Poster Walking Tours
(Meet at Poster Help Desk in Academy Hall)

Wednesday 11:30 AM – 12:30 PM
Joshua L. Gary, MD will lead the tour in Spanish through highly cutting-edge Trauma posters.

Thursday, 11:30 AM – 12:30 PM
Miguel E. Cabanela, MD will lead the tour in Spanish through highly acclaimed Adult Reconstruction Hip and Knee posters.

Showdowns®
Watch as surgeons debate topics and techniques; then YOU determine who wins.
- Debates, Dilemmas and Controversies in Total Hip Showdowns®
- Controversies in Spine Surgery Showdowns®
View details on page 39.

The Way I See It…®
Hear the faculty’s “why” behind what they do with candid, personal opinions on top-of-mind issues. View details on page 38.

Technology Theater
Attend a presentation of the latest technology and applications beneficial to surgeons and staff teams. Presentations take place Wednesday through Friday in the Exhibit Hall A, Booth 771. View schedule on page 360.

Submit your evaluations via the My Academy app and enter to win $100 American Express gift card.

The contribution of your evaluation is critical and used to deliver high-quality education across all practice areas. For each Instructional Course Lecture and Symposium evaluation you complete, you’ll be automatically entered in a daily drawing for a $100 American Express gift card. Winners will be notified via email.
The Way I See It...®

Keep current with expert insight and practical guidance. Hear the faculty’s candid opinions on these top-of-mind issues.

**The Way I See It...™: Overlapping Surgery in 2019 – Is It Ok and How Should I Do It? (TWISI1)**

Moderator: Vani J. Sabesan, MD

**Tuesday, March 12, 4:00 – 5:00 PM, Room 3401**

**Topics and Speakers:**
- Surgery in Series: Why the Traditional Model Doesn’t Make Sense • Vani J. Sabesan, MD
- Keys to Compliance When Running Two Rooms: How to Do It Right and Make Patients Happy • Preetesh D. Patel, MD
- Staggered Surgery in a Hybrid Private Practice / Academy Environment • Thomas ‘Quin’ Throckmorton, MD
- Overlapping Surgery in an Academic Medical Center • Gerald R. Williams, MD

**The Way I See It...™: Artificial Intelligence, Machine Learning, and Big Data (TWISI2)**

Moderator: Joseph H. Schwab, MD

**Wednesday, March 13, 11:00 AM – 12:00 PM, Room 3401**

**Topics and Speakers:**
- Overview of Artificial Intelligence in Orthopedics • Joseph H. Schwab, MD
- Applied Predictive Modeling with Machine Learning • Aditya V. Karhade, BS
- Machine Learning in Spine Surgery • Paul T. Ogink, MD
- Machine Learning in Orthopedic Oncology • Quirina Thio, MD
- Deep Learning for Orthopedic Imaging • Joseph H. Schwab, MD & Aditya Karhade, BS
- Predictive Analytics for Orthopedic Trauma • Joseph H. Schwab, MD & Quirina Thio, MD
- Emerging Opportunities and Future Directions • Joseph H. Schwab, MD & Paul Ogink, MD

**The Way I See It...™: Surgeon Burnout – Consider as a Stress Fracture Versus Insufficiency Fracture (TWISI3)**

Moderator: Alexandra E. Page, MD

**Thursday, March 14, 4:00 – 5:00 PM, Room 3401**

**Topics and Speakers:**
- Burnout: What Is It? • S. Elizabeth Ames, MD
- Why Surgeons Burnout and How to Restore Positive Emotion • John D. Kelly IV, MD
- Burnout in Orthopaedic Leadership and Training Programs • Khaled J. Saleh, MD, FRCSC
- Organization Change to Promote Well-Being • Peggy L. Naas, MD
- Combat Burnout with Personal Resilience and Positive Attitude • Jeffrey M. Smith, MD
- Burnout and Gender • Alexandra E. Page, MD

**The Way I See It...™: Orthopaedic Surgeons Changing the Game (TWISI4)**

Presented in conjunction with the Game Changers Paper Session

Co-Moderators: Charles M. Davis III, MD, PhD and Claudette M. Lajam, MD

**Friday, March 15, 1:30 – 3:30 PM, Room 4401**

**Topics and Speakers:**
- Up and Coming Technology for Prosthetics • Joseph R. Hsu, MD
- Gene Sequencing as it Relates to Diagnosis of Infection • Javad Parvizi, MD, FRCS
- When to Operate: Using Inflammatory Markers as an Indicator • Heather A. Vallier, MD

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Customize your experience with the **My Academy** app

- Access ICL handouts for your purchased courses and complete session evaluations.
- Participate in the Audience Response System for selected sessions.
Showdowns®

Watch as surgeons debate topics and techniques; then YOU determine who wins via the Audience Response System on the My Academy app.

Wednesday, March 13
8:00 – 9:00 AM, Room 3401
Showdowns*: Debates, Dilemmas, and Controversies in Total Hip Arthroplasty (SD1)
Moderator: Adolph V. Lombardi, Jr, MD

Will debate the latest techniques in state of the art technology in total knee arthroplasty including Robotics, Smart Tools, Sensors, and Custom implants.

The Direct Anterior Approach
Keith R. Berend, MD vs. Kevin L. Garvin, MD

Dual Mobility Is the Best Option in the Fused Spine Patient
Robert L. Barrack, MD vs. William J. Maloney, MD

Fixation in the Elderly Osteopenic Female
C. Anderson Engh, MD vs. Jay R. Lieberman, MD

Ceramic Versus Chrome Cobalt
Donald S. Garbuz, MD vs Joshua J. Jacobs, MD

Thursday, March 14
1:30 – 2:30 PM, Room 3401
Showdowns*: Controversies in Spine Surgery (SD2)
Moderator: John G. Finkenberg, MD

Will feature your orthopaedic colleagues debating topics and techniques that demonstrate their point of view, and you decide who wins.

Steroid Administration for Spinal Injury

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<td>Michael Fehlings, MD</td>
<td>Zoher Ghogawala, MD</td>
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Sacroiliac Joint Fusion

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<td>David W. Polty Jr, MD</td>
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Endoscopic Discectomy and Nerve Root Decompression vs. MIS Approach

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<td>Choll W. Kim, MD, PhD</td>
<td>Thomas E. Mroz, MD</td>
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Flash Five®: What’s Coming Down the Pike?

Hear critical takeaways on these hot topics during focused 5-minute presentations.

Tuesday, March 12
1:30 – 2:30 PM, Room 3401
Moderator: Charles M. Davis III, MD, PhD

Pain Management in Hip and Knee Arthroplasty
Henry D. Clarke, MD

Distal Radius/Scaphoid Fractures
Michael E. Darowish, MD

Bone Health and Other Topics
John R. Dimar II, MD

Spinal Deformity
Themistocles S. Protopsaltis, MD

Biologics
Scott A. Rodeo, MD

Pediatric Septic Hip
Scott M. Sorenson, MD

New Developments for Glenoid Bone Deficiency
Robert Z. Tashjian, MD

Management of Multiply Injured Patients
Paul Tornetta III, MD

Heather A. Vallier, MD (Thurs)

Management of Metastatic Disease
Kristy L. Weber, MD

Susan V. Bukata, MD (Thurs)

Sports Injuries to the Foot and Ankle
Thomas G. Harris, MD

BONUS: Opioids
Laurel A. Beverley, MD, MPH
Robert R. Slater Jr., MD (Thurs)

Can't make it to the Tuesday session?
Global Perspectives Paper Session
 Tuesday, March 12
 1:30 - 3:30 PM, Palazzo Ballroom L
 Co-Moderators: Pascal Boileau, MD, Nice, France and Dane H. Salazar, MD, Maywood, IL
 The best papers from counties outside of the United States are presented in one session. Come hear the experts discuss important topics from outside the US. This paper session is presented in English.

Guest Nation Symposium
 Symposium J – Korean Perspective of Arthroscopic Surgery: Upper and Lower Extremity
 Wednesday, March 13
 4:00 – 6:00 PM, Room 4401
 Co-Moderators: Yong-Girl Rhee, MD and Anthony A. Romeo, MD
 Covers all areas of arthroscopic management of complex rotator cuff tear, recurrent shoulder instability with critical glenoid bone loss, stiff elbow, and bone graft for scaphoid nonunion. This symposium is a collaboration between AAOS and the 2019 Guest Nation of Republic of Korea.

Poster and Scientific Exhibits Awards Ceremony
 Friday, March 15
 7:00 AM, Academy Hall, Venetian Ballroom
 Join us for a free continental breakfast and the Poster Awards Ceremony. Central Program Committee Chair, Charles M. Davis, MD, PhD, presents the winners of the best poster in each classification, the best overall poster and best overall scientific exhibit for the 2019 Annual Meeting.

President’s Symposium
 Symposium T – Domestic Mass Casualty and Disaster Coming to Your Area
 Friday, March 15
 8:00 – 10:00 AM, Palazzo Ballroom E
 Co-Moderators: James R. Ficke, MD and David C. Teague, MD
 This special symposium by AAOS President David A. Halsey, MD will enhance awareness of domestic disaster occurrences and provide education on best preparedness practices. Discuss avenues to influence local, regional and national policy.

Annual Meeting Highlights Symposium
 Symposium V
 Friday, March 15
 11:00 AM - 12:30 PM, Room 4401
 Co-Moderators: Leesa M. Galatz, MD and Marc R. Safran, MD
 This symposium features a synopsis of the best papers and posters from each of the 11 classifications that represent Annual Meeting education. Members of the Program Committees present the best three to five studies presented at the 2019 Annual Meeting. The symposium provides attendees with an opportunity to maximize their Academy experience.

Game Changers Paper Session and The Way I See It… ®: Orthopaedic Surgeons Changing the Game
 Friday, March 15
 1:30 - 3:30 PM, Room 4401
 Co-Moderators: Charles M. Davis III, MD, PhD and Claudette Lajam, MD
 The Central Program Committee is pleased to present this very special combined session that focuses on cutting edge research that could change the way you might practice in the next two to three years. It represents research that could change the way you think or address a difficult problem that impacts current practice; and hear from “game changing” orthopaedic surgeons who have performed innovative and revolutionary techniques.

ePosters and eScientific Exhibit Kiosks
 Tuesday – Saturday
 Academy Hall, Venetian Ballroom
 Visit the kiosks to view the ePosters and eScientific Exhibits, hear an audio narration of a scientific exhibit and see any posters you may have missed in either Poster Session I (Tuesday – Wednesday) or Poster Session II (Thursday – Saturday).

Proceedings
 Access the Proceedings online! View the symposia handouts and abstracts from the Orthopaedic Video Theater, Papers, Posters, and Scientific Exhibits at aaos.org/proceedings.

Strengthen your professional skills and competencies with Career Development Courses.

Tuesday, March 12, Room 4505
 8:00 – 9:00 AM
 Preparing and Delivering the Orthopaedic Lecture: Tips and Pearls
 9:30 – 10:30 AM
 The Aging Surgeon
 11:00 AM – 12:00 PM
 Leadership at Every Level: Principles and Practice

Wednesday, March 13, Room 4505
 8:00 – 9:00 AM
 What You Need to Know About Workplace Harassment
 11:00 AM – 12:00 PM
 Hot Marketing Topics to Build Your Practice
 1:30 – 2:30 PM
 Writing a Competitive Grant Application
 3:00 – 4:00 PM
 Optimizing Your Chances for Presentations and for Publications
 4:30 – 5:30 PM
 Social Media and Orthopaedics: Establishing Your Online Reputation
### Guided Poster Tours

Hear highlights and key takeaways from selected posters in each classification during expert-led poster tours.

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th>Classification</th>
<th>Expert</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Tuesday, March 12</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10:00 - 11:00 AM</td>
<td>Practice Management</td>
<td>Josef K. Eichinger, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Adult Reconstruction Hip</td>
<td>Paul J. Duwelius, MD</td>
</tr>
<tr>
<td>1:30 - 2:30 PM</td>
<td>Spine featuring posters from the Republic of Korea, Guest Nation</td>
<td>Samuel K. Cho, MD; Jae-Hyuk Shin, MD</td>
</tr>
<tr>
<td>3:00 - 4:00 PM</td>
<td>Trauma</td>
<td>Andrew R. Evans, MD</td>
</tr>
<tr>
<td>4:30 - 5:30 PM</td>
<td>Adult Reconstruction Knee</td>
<td>Sumon Nandi, MD</td>
</tr>
<tr>
<td><strong>Wednesday, March 13</strong></td>
<td></td>
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<tr>
<td>8:30 - 9:30 AM</td>
<td>Spine</td>
<td>Wayne G. Paprosky, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Adult Reconstruction Hip featuring posters from Asia Pacific</td>
<td>Hooman M. Melamed, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>New! Trauma Poster Walking Tour en Español*</td>
<td>Joshua L. Gary, MD</td>
</tr>
<tr>
<td>1:30 - 2:30 PM</td>
<td>Hand and Wrist</td>
<td>John Elfar, MD</td>
</tr>
<tr>
<td>3:00 - 4:00 PM</td>
<td>Pediatrics</td>
<td>Kristan Pierz, MD</td>
</tr>
<tr>
<td>4:30 - 5:30 PM</td>
<td>Adult Reconstruction Knee</td>
<td>Daniel J. Del Gaizo, MD</td>
</tr>
<tr>
<td><strong>Thursday, March 14</strong></td>
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</tr>
<tr>
<td>8:30 - 9:30 AM</td>
<td>Shoulder and Elbow</td>
<td>Vani J. Sabesan, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Spine Med</td>
<td>Matthew T. Provencher, MD CAPT MC USNR</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>New! Adult Reconstruction Hip &amp; Knee Poster Walking Tour en Español*</td>
<td>Miguel E. Cabanela, MD</td>
</tr>
<tr>
<td>1:30 - 2:30 PM</td>
<td>Adult Reconstruction Hip featuring posters from the Republic of Korea, Guest Nation</td>
<td>Ran Schwarzkopf, MD; Kyoung Ho Moon, MD</td>
</tr>
<tr>
<td>3:00 - 4:00 PM</td>
<td>Adult Reconstruction Hip</td>
<td>Andrew M. Star, MD</td>
</tr>
<tr>
<td>4:30 - 5:30 PM</td>
<td>Musculoskeletal Oncology</td>
<td>Carol D. Morris, MD</td>
</tr>
<tr>
<td><strong>Friday, March 15</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8:30 - 9:30 AM</td>
<td>Foot and Ankle</td>
<td>Michael S. Aronow, MD</td>
</tr>
<tr>
<td>11:30 AM - 12:30 PM</td>
<td>Shoulder and Elbow</td>
<td>Julie Bishop, MD</td>
</tr>
<tr>
<td>1:30 - 2:30 PM</td>
<td>Sports Medicine featuring posters from Europe</td>
<td>Nikhil K. Verma, MD</td>
</tr>
<tr>
<td>3:00 - 4:00 PM</td>
<td>Spine</td>
<td>Kern Singh, MD</td>
</tr>
</tbody>
</table>

* Walking tour participants please meet at the Poster Help Desk in Academy Hall.
The return of this renowned review course prepares you for the board exam with reviews on current knowledge of diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective. Whether you want to refresh your knowledge, learn current and pertinent information to refocus your knowledge, or you are preparing for your board exam, this course is focused on you!

<table>
<thead>
<tr>
<th>Time</th>
<th>Events</th>
<th>Faculty</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:00 – 10:00 AM</td>
<td>LOWER EXTREMITY</td>
<td>Moderator: Donald A. Wiss, MD</td>
</tr>
<tr>
<td>8:00 AM</td>
<td>Foot and Ankle</td>
<td>Steven L. Haddad, MD</td>
</tr>
<tr>
<td>8:30 AM</td>
<td>Hip and Knee Reconstruction</td>
<td>Matthew S. Austin, MD</td>
</tr>
<tr>
<td>9:00 AM</td>
<td>Trauma</td>
<td>Donald S. Wiss, MD</td>
</tr>
<tr>
<td>9:30 AM</td>
<td>Sports Knee</td>
<td>Mark D. Miller, MD</td>
</tr>
<tr>
<td>10:00 – 10:15 AM</td>
<td>Stretch Break</td>
<td></td>
</tr>
<tr>
<td>10:15 AM – 12:15 PM</td>
<td>PEDIATRICS</td>
<td>Moderator: David L. Skaggs, MD</td>
</tr>
<tr>
<td>10:15 AM</td>
<td>Pediatric Spine</td>
<td>David L. Skaggs, MD</td>
</tr>
<tr>
<td>10:45 AM</td>
<td>Lower Extremity: Hip to Foot</td>
<td>Jonathan Schoenecker, MD</td>
</tr>
<tr>
<td>11:15 AM</td>
<td>Neuromuscular, Syndromes, Developmental Problems and Other Issues</td>
<td>David D. Spence, MD</td>
</tr>
<tr>
<td>11:45 AM</td>
<td>Fractures of the Upper and Lower Extremities</td>
<td>Christine A. Ho, MD</td>
</tr>
<tr>
<td>12:15 – 12:55 PM</td>
<td>LUNCH (box lunch included)</td>
<td></td>
</tr>
<tr>
<td>1:00 – 3:00 PM</td>
<td>UPPER EXTREMITY</td>
<td>Moderator: O. Alton Barron, MD</td>
</tr>
<tr>
<td>1:00 PM</td>
<td>Hand and Wrist</td>
<td>Jacques H. Hocquebord, MD</td>
</tr>
<tr>
<td>1:40 PM</td>
<td>Forearm and Elbow</td>
<td>O. Alton Barron, MD</td>
</tr>
<tr>
<td>2:20 PM</td>
<td>Shoulder and Humerus</td>
<td>Jeffrey S. Abrams, MD</td>
</tr>
<tr>
<td>3:00 – 3:15 PM</td>
<td>Stretch Break</td>
<td></td>
</tr>
<tr>
<td>3:15 – 5:15 PM</td>
<td>SPINE / TUMOR</td>
<td>Moderator: Jens R. Chapman, MD</td>
</tr>
<tr>
<td>3:15 PM</td>
<td>Metabolic Bone Disease</td>
<td>Joseph M. Lane, MD</td>
</tr>
<tr>
<td>3:45 PM</td>
<td>Degenerative</td>
<td>Todd J. Albert, MD</td>
</tr>
<tr>
<td>4:15 PM</td>
<td>Trauma</td>
<td>Jens R. Chapman, MD</td>
</tr>
<tr>
<td>4:45 PM</td>
<td>Tumors</td>
<td>Albert J. Aboulafia, MD</td>
</tr>
<tr>
<td>5:15 PM</td>
<td>Adjourn</td>
<td></td>
</tr>
</tbody>
</table>

As a registered participant you’ll receive a FREE 30 day trial of OrthoWizard beginning on April 1, 2019. OrthoWizard includes 2700+ questions across all orthopaedic practice areas. Available on the AAOS online learning platform at learn.aaos.org.
Prepare for Practice and Further your Career

Nowhere else can you interact with expert faculty, experience remarkable technology advances, and participate in resident focused activities developed exclusively for you.

**Practice Management for Residents and Fellows-in-Training #191**
Tuesday 12:30 – 5:00 PM
Room 2102
Review essential elements of practice management and learn the foundation to prepare for practice. (CME credit not available)

**NEW! Speed Mentoring for Residents #390**
Thursday 8:00 – 9:30 AM
Room 3301
Learn how to navigate the transition from residency to practicing physician from the pro’s. This free session will focus on guidance of the practical and the intangibles you need to start your next phase of our career in a successful manner. (CME credit not available)

**Resident Assembly Open Forum**
Wednesday 10:00 – 11:00 AM
Room 904
An opportunity to present and discuss advisory opinions proposed by residents to affect change in the AAOS that will be voted on at the Resident Assembly the following day.

**Resident Assembly Business Meeting - Get Involved!**
Thursday 1:30 – 3:30 PM
Room 3301
The Resident Assembly provides you with lifelong learning, leadership, and the opportunity to impact the AAOS organization as well as your professional advancement.

**Forum for Young Orthopaedic Surgeons with the American Board of Orthopaedic Surgery**
Thursday 11:00 AM – 12:30 PM
Room 3301
Meet with Executive Medical Director of the ABOS, David F. Martin, MD, during this unique forum and learn critical information about Board requirements and procedures.

**Resident Education Forum**
Friday, 10:00 – 11:00 AM
Room 904
Join us to help improve resident education and share best practices for shaping the future of orthopaedic resident education.

**Residents Assembly Business Meeting - Get Involved!**
Thursday 1:30 – 3:30 PM
Room 3301
The Resident Assembly provides you with lifelong learning, leadership, and the opportunity to impact the AAOS organization as well as your professional advancement.

**The Resident Bowl**
Thursday 4:00 – 6:00 PM
Palazzo Ballroom P
An exciting opportunity for residents to test their knowledge and compete for prizes in a game-style setting. A limited number of residents can sign up on-site. All are welcome to be in the audience and cheer for their colleagues.

**Sponsored by:**

**Stryker**

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AAOS supports the educational and advancement needs of orthopaedic residents with resources to build your knowledge, gain insight into the highest quality surgical practices, and prepare for your progression into fellowship and beyond.

Visit with Membership staff in Academy Hall (Venetian Ballroom) or learn more at aaos.org/mybenefits
The Central Program, Central Instructional Courses, Education Track, Exhibits, and Orthopaedic Video Theater Committees gratefully acknowledge the efforts of all the committee members who volunteered their time and expertise to organize an excellent educational experience for all attendees.

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Shafic A. Sraj, MD, Morgantown, WV

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Harlan B. Levine, MD, Tenafly, NJ
Wade P. McAlister, MD, Houston, TX
Simon Mears, MD, Little Rock, AR
Yogesh Mittal, MD, Tulsa, OK
Denis Nam, MD, MSc, Chicago, IL
Nathaniel J. Nelms, MD, South Burlington, VT
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Siraj A. Sayeed, MD, San Antonio, TX
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Eoin C. Sheehan MD, FRCS, Dublin, Ireland
William F. Sherman, MD, New Orleans, LA
Neil P. Sheth, MD, Philadelphia, PA
Anand Srinivasan, MD, Park Ridge, IL
Andrew M. Star, MD, Ambler, PA

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Thomas G. Harris, MD, Altadena, CA
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David R. Richardson, MD, Southaven, MS
Paul M. Ryan, MD, Kailua, HI
Ross A. Schumer, MD, Colorado Springs, CO
Douglas G. Wright, MD, Manahawkin, NJ

# Musculoskeletal Oncology

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Bang H. Hoang, MD, Bronx, NY
Francis Y. Lee, MD, PhD, New Haven, CT
Dieter Lindskog, MD, New Haven, CT
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Kyle Anderson, MD, Detroit, MI
Joshua A. Baumfield, MD, Newburyport, MA
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Julie Y. Bishop, Columbus, OH
Ian R. Byram, MD, Franklin, TN
David M. Dines, MD, Uniondale, NY
Sara L. Edwards, MD, San Francisco, CA

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Travis C. Burns, MD, San Antonio, TX
Charles L. Cox III MD, Nashville, TN
Katherine J. Coynor, MD, Farmington, CT
Tal S. David, MD, San Diego, CA
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Gregory S. DiFelice, MD, New York, NY
Brian T. Feeley, MD, San Francisco, CA
Robert A. Gallo, MD, Hershey, PA
Trevor R. Gaskill, MD, Manhattan, KS
Timothy S. Johnson, MD, Lansdowne, VA
John D. Kelly IV, MD, Newton Square, PA
Eric J. Kropf, MD, Philadelphia, PA
Lance E. LeClerc, MD, Annapolis, MD
Cassandra A. Lee, MD, Sacramento, CA
Ethan Lichtblau, MD, Montreal, QC, Canada
ChunBong B. MA, MD, San Francisco, CA
Jeffrey A. Macalena, MD, Minneapolis, MN
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Edward R. McDevitt, MD, Annapolis, MD
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David Yucha, MD, West Chester, PA

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Spine
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Michael Faloon, MD, Egg Harbor Township, NJ
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Joshua Hornstein, MD, Newtown, PA
Elliott H. Leitman, MD, Newark, DE
Anil S. Ranawat, MD, New York, NY
Armando F. Vidal, MD, Denver, CO

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Gail S. Chorney, MD, New York, NY
Thomas B. Fleeter, MD, Reston, VA
Bryan T. Wall, Peoria, AZ

Sports Medicine (cont.)

Trauma
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Barry C. Davis, MD, Port St. Lucie, FL
Edward Perez, MD, Memphis, TN
Seth R. Yarboro, MD, Charlotteville, VA
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The Academy would like to thank the Annual Meeting Committee for their hard work and contributions to the 2019 Annual Meeting
Tuesday Educational Programs

**Career Development**

**8:00 AM - 9:00 AM**

- **CD1**  
  Preparing and Delivering the Orthopaedic Lecture: Tips and Pearls  
  Moderator: James H. Beaty, MD, Memphis, TN  
  James J. McCarthy, MD, Cincinnati, OH  
  Theodore W. Parsons, MD, FACS, Detroit, MI  
  David L. Skaggs, MD, Los Angeles, CA

This course focuses on utilizing PowerPoint especially for the medical professional and developing a lecture for an orthopaedic audience. Learn tips and tricks you can use to enhance your teaching skills when participating in educational sessions for your colleagues and for patient education – both individually and community wide.

**Symposium**

**8:00 AM - 10:00 AM**

- **4401**  
  A Management of Periprosthetic Infection-Technical Tips for Success  
  Moderator: Thomas K. Fehring, MD, Charlotte, NC

This symposium will help surgeons understand the indications/results and technical aspects to optimize management of periprosthetic infection using a variety of treatment alternatives.

I. Safe Extraction and Spacer Management  
  Michael P. Bolognesi, MD, Durham, NC

II. Indication/Results of Single and Multiple Debridements  
  Thomas L. Bradbury, MD, Atlanta, GA

III. Timing of Reimplantation/IV Antibiotics/Chronic Suppression  
  Brian M. Curtin, MD, Charlotte, NC

IV. Indications and Results/Draping to Facilitate Transition (video)/Extraction Methods to Facilitate Immediate Reimplantation/Optimal Irrigation Regimes/Case Presentations and Discussion  
  Keith Fehring, MD, Charlotte, NC

V. Perioperative Antibiotics/Chronic Suppression/Resorbable Beads/Powdered Antibiotics  
  Jeremy Gililland, MD, Salt Lake City, UT

VI. Efficient Transition Between Extraction and Reimplantation (video)/Reimplantation Strategies/Perioperative Antibiotics/Suppression  
  Jesse E. Otero, MD, Iowa City, IA

VII. Irrigation Solutions, Intraosseous Antibiotics  
  Bryan D. Springer, MD, Charlotte, NC

VIII. Indications and Results  
  Michael J. Taunton, MD, Rochester, MN

**Instructional Course Lectures**

**8:00 AM - 10:00 AM**

- **101**  
  Preventing Hospital Readmissions and Limiting the Complications Associated with Total Hip Arthroplasty  
  Moderator: Vincent D. Pellegrini, MD, Charleston, SC  
  Eric Bolin, MD, Charleston, SC  
  Harry A. Demos, MD, Charleston, SC  
  Jacob M. Drew, MD, Boston, MA

With increasing attention on hospital readmission after total hip arthroplasty, there is a need to better understand and prevent complications responsible for readmission to the hospital.

- **3201**  
  Biologics in Rotator Cuff Repair: Magic or Mischief?  
  Moderator: John M. Tokish, MD, Scottsdale, AZ  
  Jeffrey S. Abrams, MD, Princeton, NJ  
  Jason L. Dragoo, MD, Redwood City, CA

This course offers a thorough presentation of the use of biologics in the setting of a rotator cuff tear and its impact on patient outcomes.

- **4301**  
  Management of the Cavus Foot: A Practical Guide with Video Techniques  
  Moderator: William C. McGarvey, MD, Houston, TX  
  John Campbell, Baltimore, MD  
  J. Chris Coetzee, MD, Mendota Heights, MN  
  Steven Haddad, MD, Glenview, IL

The cavus foot has a varied presentation. This course explains how to examine the foot for a flexible deformity and thereby avoid arthrodesis. An algorithm for treatment of forefoot, midfoot, and hindfoot deformity on the cavus foot is presented. Each deformity is outlined with a case-based approach using video techniques to emphasize reconstruction.

- **3105**  
  Prepare for Alternative Payment Models (APMs) and Take Better Care of Your Patients: A Novel System for Hip and Knee Osteoarthritis (OA)  
  Moderator: William A. Jiranek, MD, Durham, NC  
  Richard C. Mather, MD, Durham, NC  
  Jonathan O’Donnell, MD, Durham, NC  
  Morven A. Ross, DPT, PT, Durham, NC

Current hip and knee OA care is disjointed and inconsistent. This course presents a system for improved longitudinal management amenable to Alternative Payment Models (APMs).

- **105**  
  Hip and Groin Pain in the Athlete  
  Moderator: Marc R. Safran, MD, Redwood City, CA  
  Brian D. Busconi, MD, Worcester, MA  
  J. W. Thomas Byrd, MD, Nashville, TN  
  Christopher M. Larson, MD, Edina, MN

This case-based ICL reviews evaluation and treatment options, including preferred management and return to participation, of hip and groin injuries in athletes.

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106 Infections of the Upper Extremity – New Developments and Challenges
Moderator: Apurva Shah, MD, MBA, Philadelphia, PA
Deana Mercer, MD, Albuquerque, NM
Douglas R. Osmon, MD, Rochester, MN
Robert W. Wysocki, MD, Chicago, IL

Course presenters review the role of the infectious disease consultant with an emphasis on serological testing, diagnostic workup, and microbiological analysis. Through illustrative case examples, they discuss the key clinical features and treatment of necrotizing fasciitis, mucormycosis, and infections caused by mycobacteria and Vibrio species.

107 Diagnosis and Management of Common Conditions of the Pediatric Spine
Moderator: James F. Mooney III, MD, Springfield, MA
Jaysson Brooks, MD, Jackson, MS
Dennis P. Devito, MD, Atlanta, GA
Robert F. Murphy, MD, Charleston, SC

This course covers management of back pain and spinal deformity in pediatric and adolescent patients, including physical therapy, advanced imaging, bracing, operative strategies, and return to sports.

108 Race and Gender in Orthopaedics
Moderator: Peter Tang, MD, Sewickley, PA
Joshua M. Abzug, MD, Timonium, MD
Shervondalonn R. Brown, MD, Nashville, TN
Freddie Fu, MD, Pittsburgh, PA

Similar to most industries, orthopaedic surgery is dominated by white males. The faculty will discuss their perspectives as minorities when they were orthopaedic residents and now practicing physicians. The faculty will discuss methods to promote diversity in our field.

109 Elbow Arthroscopy: Latest Indications and Techniques
Moderator: Scott P. Steinmann, MD, Rochester, MN
Gregory I. Bain, MD, North Adelaide, Australia
Daniel H. Doty, MD, Chattanooga, TN
Mark Morrey, MD, Rochester, MN

This ICL focuses on current and latest indications and techniques of elbow arthroscopy. Faculty will share specific tips and tricks to optimize outcomes and avoid complications.

110 Revision Shoulder Arthroplasty: A Step-by-Step Approach
Moderator: Michael S. Khazzam, MD, Southlake, TX
John M. Itamura, MD, Los Angeles, CA
James D. Kelly, MD, San Francisco, CA
Tom R. Norris, MD, San Francisco, CA

This course is designed to help understand the technical difficulties encountered when performing a revision shoulder arthroplasty. We demonstrate techniques for preoperative evaluation and planning, surgical approach, humeral and glenoid component removal, successful bony reconstruction, and component re-implantation. The course includes revision of both anatomic and reverse shoulder arthroplasty.

111 Pragmatic Learning for New Techniques and Technologies in Spine Surgery
Moderators: Charla R. Fischer, MD, New York, NY and Sheeraz Qureshi, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY
Nitin Khanna, MD, Munster, IN

Adapting a spinal surgery practice to new technologies is challenging. The goal of this session is to review strategies and tips for learning new techniques.
Tuesday Educational Programs

112  Primary Anterior Cruciate Ligament Reconstruction (ACL-R): Getting it Right the First Time
Moderator: Alexander Weber, MD, Los Angeles, CA
Bernard R. Bach, MD, River Forest, IL
Asheesh Bedi, MD, Ann Arbor, MI
Nikhil N. Verma, MD, Chicago, IL
Room 4305
Skills gained include techniques for footprint/tunnel visualization, increased familiarity with dependent and independent tunnel drilling to improve footprint coverage, and enhanced graft fixation and tensioning are explored.

113  Joint Preservation Techniques for the Knee in 2019: The Utility of Biologics, Osteotomies, and Cartilage Restoration Procedures
Moderator: Rachel M. Frank, MD, Boulder, CO
Seth Sherman, MD, Columbia, MO
Eric J. Strauss, MD, Scarsdale, NY
Armando F. Vidal, MD, Denver, CO
Room 3304
This course provides a comprehensive overview of joint preservation techniques for the knee, including biologic and reconstructive approaches, with an emphasis on evidence-based treatment guidelines for young, high-demand patients.

114  Trauma Mini-Review: Hot Topics and the Latest Treatment Strategies in Orthopaedic Trauma
Moderator: Robert F. Ostrum, MD, Chapel Hill, NC
Mark Gage, MD, Durham, NC
Paul Torretta III, MD, Boston, MA
Richard S. Yoon, MD, Jersey City, NJ
Room 2201
Course presenters review hot topics and the latest evidence-based treatment strategies in orthopaedic trauma.

115  Talus and Calcaneus Fractures: Current Treatment
Moderator: John W. Munz, MD, Houston, TX
Mark R. Adams, MD, Newark, NJ
Stephen K. Benirschke, MD, Seattle, WA
Brad J. Yoo, MD, New Haven, CT
Room 3404
This ICL reviews current concepts on management of complex fractures of the talus and calcaneus.

181  Periprosthetic Fractures of the Hip and Knee: A Case-Based Instructional Course Lecture
Moderator: George J. Haidukewych, MD, Orlando, FL
Paul J. Duwelius, MD, Portland, OR
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
Kevin L. Garvin, MD, Omaha, NE
Curtis W. Hartman, MD, Omaha, NE
Richard F. Kyle, MD, Minneapolis, MN
Joshua Langford, MD, Orlando, FL
David G. Lewallen, MD, Rochester, MN
Frank A. Liporace, MD, Englewood Cliffs, NJ
Jeffrey Petrie, MD, Orlando, FL
Scott M. Sporer, MD, Wheaton, IL
Room 4101
This case-based periprosthetic hip and knee fracture course gives the participant an opportunity to interact in small group format with national faculty in learning current treatment techniques.

182  Controversies in the Treatment of Infantile Hip Dysplasia: A Worldwide Perspective
Moderator: Pablo Castaneda, MD, New York, NY
Martin Gargan, FRCS (Ortho), Toronto, ON, Canada
Simon Kelley, MBChB, FRCS (Ortho), Toronto, ON, Canada
Kishore Mulpuri, MBBS, MS, Vancouver, BC, Canada
Charles T. Price, MD, Orlando, FL
Wudbhav N. Sankar, MD, Wynnewood, PA
Vidyadhar V. Upasani, MD, San Diego, CA
Carlos A. Vidal, MD, Mexico City, Mexico
Stuart L. Weinstein, MD, Iowa City, IA
Ira Zaltz, MD, Royal Oak, MI
Room 4103
Faculty presents the current state of the art from a worldwide perspective for infantile developmental dysplasia of the hip, covering screening, early treatment, and evidence-based outcomes.

INSTRUCTIONAL COURSE LECTURE

8:00 AM - 11:00 AM
Room 2102
190  CPT and ICD-10 Coding Fundamentals for Starting Your Practice
Moderator: Margaret Maley, BSN, MS, Friendswood, TX
By the end of the course, residents can identify how ICD-10 diagnosis coding will impact your documentation for five common orthopaedic diagnoses; demonstrate how to use technology to find the correct ICD-10 diagnosis in real time; understand how relative value units (RVUs) may be used to calculate your reimbursement or bonus if you are an employed physician; know how procedures are discounted by payors and how arthroscopic procedures are discounted differently; describe how modifiers protect reimbursement; and understand what is included in the global surgical package. Join us for this complimentary workshop that is so important to your career! PLEASE NOTE: This course focuses on issues uniquely relevant to the practice of orthopaedic surgery in the United States. For this reason, registration for this course is restricted to orthopaedic residents living in the United States.

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Tuesday Educational Programs

8:00 AM - 10:00 AM
Room 3401
Adult Reconstruction Knee I (001-015): Infection in Total Knee Arthroplasty
Moderators: Brett R. Levine, MD, Chicago, IL and Matthew P. Abdel, MD, Rochester, MN

8:00 AM
Impact of Antibiotic-Loaded Bone Cement on Antibiotic Resistance in Prosthetic Knee Infections
Daniel Schmitt, MD, Maywood, IL
Cameron Killen, MD, Maywood, IL
Michael Murphy, Downers Grove, IL
Michael Perry, MD, Maywood, IL
Joseph Romano, MD, River Forest, IL
Nicholas M. Brown, MD, Chicago, IL

The use of antibiotic-laden bone cement does not significantly increase individual antibiotic resistance or alter the pattern of infecting organism in periprosthetic knee infection.

8:06 AM
Tobramycin-Loaded Poly(methylmethacrylate) Does Not Eradicate Infection and is Colonized by Bacteria in Mouse Model of Revision Prosthetic Joint Infection
Zachary Burke, MD, Venice, CA
Stephen D. Zoller, MD, Los Angeles, CA
Gideon W. Blumstein, MD, Los Angeles, CA
Keljnn Hori, BS, San Francisco, CA
Nicolas A. Cevallos, Chula Vista, CA
Cristina Villalpando, Hawthorne, CA
Nicole Truong, Yorba Linda, CA
Joshua D. Proal, Cardiff, CA
Nicholas M. Bernthal, MD, Santa Monica, CA

Tobramycin-loaded PMMA showed an early decline in bacterial burden, but ultimately failed to eradicate infection and viable bacteria were cultured from TOB-PMMA implants upon explantation.

8:12 AM
Does the Type of Antibiotic Spacer Affect Time-to-Failure in the Staged Treatment of Total Knee Periprosthetic Joint Infection?
Yi-Loong C. Woon, MD, New York, NY
Celeste Russell, MPH, New York, NY
Joseph Nguyen, MPH, New York, NY
Michael Henry, MD, New York, NY
Andy Miller, MD, New York, NY
Geoffrey H. Westrich, MD, New York, NY

NEW spacers had greater survival than ACL spacers, and a trend toward greater survival when compared with CBS spacers.

8:24 AM
Reduced Infection Rate After Contemporary Revision Total Knee Arthroplasty with Extended Antibiotic Protocol
Matthieu Zingg, MD, Geneva, Switzerland
Mary Ziembas-Davis, Fishers, IN
R. Michael Meneghini, MD, Fishers, IN

The study purpose was to evaluate whether extended oral antibiotic prophylaxis minimizes PJIs in aseptic RTKA patients compared to the published literature.

8:30 AM
Predictors of Infection-Free Survival After Irrigation and Debridement of Revision Total Knee Arthroplasty
Nicholas C. Bene, Medford, MA
Xing Li, BS, West Lebanon, NH
Samon Nandi, MD, Toledo, OH

Intraoperative frozen section predicts risk of reoperation for infection following I&D with liner exchange of revision TKA. Chronic antibiotic suppression should be considered in all patients after I&D with liner exchange of revision TKA.

8:36 AM
Definitive Resection Arthroplasty of the Knee: A Surprisingly Viable Treatment to Manage Intractable Infection in Selected Patients
Ashton Goldman, MD, Rochester, MN
Nicholas J. Clark, MD, Rochester, MN
Michael J. Taunton, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

Definitive resection arthroplasty of the knee is reliable salvage procedure for the eradication of recalcitrant PJIs in 84% of patients.

8:48 AM
An Enhanced Understanding of Culture-Negative Periprosthetic Joint Infection with Next Generation Sequencing
Karan Goswami, MD, Philadelphia, PA
Majd Tarabichi, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Alexander Rondon, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study explored the ability of next generation sequencing to identify pathogens in culture-negative PJIs.
TUESDAY EDUCATIONAL PROGRAMS

8:54 AM  PAPER 008  
Increased Periprosthetic Joint Infection Risk Following Primary Total Knee Arthroplasty and Total Hip Arthroplasty with Alternatives to Cefazolin: The Value of Allergy Testing for Antibiotic Prophylaxis  
Cody Wyles, MD, Rochester, MN  
Mario Hevesi, MD, Zumbrota, MN  
Douglas R. Osmon, MD, Rochester, MN  
Miguel Park, MD, Rochester, MN  
Elizabeth Habermann, PhD, MPH, Rochester, MN  
David G. Lewallen, MD, Rochester, MN  
Daniel J. Berry, MD, Rochester, MN  
Rafael J. Sierra, MD, Rochester, MN  

PJIs rates are increased following primary TKA and THA with use of non-cefazolin antibiotics and preoperative antibiotic allergy testing is an effective method to increase cefazolin usage.

9:00 AM  PAPER 009  
Nationwide Organism Susceptibility Patterns to Common Preoperative Prophylactic Antibiotics  
Scott Nodzo, MD, Las Vegas, NV  
K. Keely Boyle, MD, Buffalo, NY  
Nicholas B. Frisch, MD, MBA, Bloomfield Hills, MI  

National antibiotic sensitivities show cefazolin had limited coverage outside of MSSA. Clindamycin also had limited coverage, and should be used with caution in cephalosporin allergic patients.

9:12 AM  PAPER 010  
Utility of Preoperative Empiric Alpha Defensin Testing in Periprosthetic Joint Infection  
Derek F. Amanatullah, MD, Redwood City, CA  
Jonathan R. Staples, MD, St. Louis, MO  
Gina Suh, MD, Stanford, CA  
Andrea Finlay, PhD, East Palo Alto, CA  
James I. Huddleston III, MD, Redwood City, CA  
William J. Maloney, MD, Redwood City, CA  
Stuart B. Goodman, MD, PhD, Redwood City, CA  

We assessed how often preoperative decision making was changed by empiric use of alpha defensin testing. We found that empiric testing didn’t change clinical decision making and was not cost effective.

9:18 AM  PAPER 011  
Does the Method of Sterile Glove Opening Influence Back Table Contamination Rates? A Fluorescent Particle Model Study  
David Holst, MD, Denver, CO  
Marc Angerame, MD, Denver, CO  
Douglas A. Dennis, MD, Denver, CO  
Jason M. Jennings, MD, Denver, CO  

Periprosthetic joint infection may result from inadvertent intraoperative contamination events. This study investigated the method of opening surgical gloves onto the operative field.

9:24 AM  PAPER 012  
One-Stage Revision Knee Arthroplasty for Infection: Mean Four Years Results from a Tertiary Care Center  
Rahul Kakar, Glasgow, United Kingdom  
Nima Razii, Glasgow, United Kingdom  
Rhidian Morgan-Jones, MD, Cardiff, United Kingdom  

One-stage revision for infected TKA, performed according to a specific protocol in a tertiary center with multidisciplinary input, is equivalent to the best outcomes reported for two-stage revisions.

9:36 AM  PAPER 013  
Total Joint Arthroplasty in Patients with History of Treated Same-Joint Septic Arthritis: A Multicenter Investigation of Incidence and Risk Factors for Periprosthetic Joint Infection  
Assem Sultan, MD, Cleveland, OH  
Jaiben George, MBBS, Cleveland, OH  
Linsen T. Samuel, MBA, MD, Floral Park, NY  
Mhamad Faour, MD, Cleveland, OH  
Christopher E. Pelt, MD, Salt Lake City, UT  
Mike Anderson, MSc, Salt Lake City, UT  
Alison K. Klika, MS, Cleveland, OH  
Carlo A. Higuera Rueda, MD, Weston, FL  

Performing TJA in patients with prior history of NSA may be associated with increased incidence of PJI particularly in smokers.

9:42 AM  PAPER 014  
Socioeconomic Status is Not a Risk Factor for Periprosthetic Joint Infection  
Andrew J. Wodowski, MD, Salt Lake City, UT  
Mike Anderson, MSc, Salt Lake City, UT  
Huong D. Meeks, MSc, PhD, Salt Lake City, UT  
Karen Curtin, PhD, Salt Lake City, UT  
Christopher E. Pelt, MD, Salt Lake City, UT  
Christoper L. Peters, MD, Salt Lake City, UT  
Jeremy Gilliland, MD, Salt Lake City, UT  

Neither household median income nor education level were associated with an increased risk of PJI. However, the Medicaid population continues to be at risk, so further research is warranted.

9:48 AM  PAPER 015  
Next Generation Sequencing Versus Culture-Based Methods for Diagnosing Periprosthetic Joint Infection After Total Knee Arthroplasty: A Cost-Effectiveness Analysis  
Michael T. Torchia, MD, Lebanon, NH  
Daniel Austin, MD, White River Junction, VT  
Samuel T. Kunkel, MD, MS, Lebanon, NH  
Kevin W. Dwyer, MD, Lyme, NH  
Wayne E. Moschetti, MD, MS, Lebanon, NH  

This Markov model assesses the cost-effectiveness of culture vs. next generation sequencing (NGS) for the diagnosis of periprosthetic joint infection (PJI) of the hip and knee.

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8:00 AM - 10:00 AM

**TUESDAY EDUCATIONAL PROGRAMS**

**PAPER PRESENTATIONS 016-030, 879**

FREE NO TICKET REQUIRED

8:00 AM

**Trauma I (016-030, 879): Geriatric Trauma**

Moderators: John T. Gorczyca, MD, Rochester, NY and James C. Krieg, MD, Philadelphia, PA

8:00 AM

**The Impact of Metabolic Syndrome on 30-Day Outcomes in Geriatric Hip Fracture Surgeries**

Azeem T. Malik, MBBS, Columbus, OH

Carmen E. Quatman, MD, PhD, Columbus, OH

Thuan V. Ly, MD, Columbus, OH

Laura Phieffer, MD, Columbus, OH

Jessice Wiseman, BA, BS, Columbus, OH

Safdar N. Khan, MD, Columbus, OH

Metabolic Syndrome in geriatric patients undergoing hip fracture surgery is associated with an increased risk of several postoperative complications, readmissions, and non-home discharge disposition.

8:06 AM

**A Restrictive Hemoglobin Transfusion Threshold of Less Than 7 g/dL Decreases Blood Utilization without Compromising Outcomes in Patients with Hip Fractures**

Raj Amin, MD, Baltimore, MD

Matthew J. Best, MD, Baltimore, MD

Stuart L. Mitchell, MD, Baltimore, MD

Steven M. Frank, MD, Baltimore, MD

Babar Shafiq, MD, Baltimore, MD

Erik A. Hasenboehler, MD, Baltimore, MD

Robert S. Sterling, MD, Owings Mills, MD

Harpal S. Khanuja, MD, Cockeysville, MD

When compared to a hemoglobin transfusion threshold of 8 g/dL, a threshold of 7 g/dL following hip fracture surgery is associated with less blood product use and fewer postoperative cardiac events.

8:12 AM

**Tranexamic Acid Demonstrates Efficacy in Geriatric Intracapsular Femoral Neck Fractures**

Joseph Ruzbarsky, MD, New York, NY

Elizabeth Gausden, MD, New York, NY

Evan W. James, MD, New York, NY

Aditya M. Derasari, MD, New York, NY

Eitan M. Goldwyn, MD, New York, NY

In the high risk patient population of geriatric hip fractures, tranexamic acid reduces both perioperative blood loss and transfusion rates with no increase in thromboembolic complications.

8:24 AM

**Preoperatively Placed Fascia Iliaca Blocks Reduce Both Pre- and Postoperative Opioid Intake in Geriatric Hip Fracture Patients**

John Garlich, MD, Los Angeles, CA

Eytan Debbi, MD, PhD, Los Angeles, CA

Dheeraj Yalamanchili, MD, Los Angeles, CA

Samuel Stephenson, MD, PhD, Beverly Hills, CA

Stephen Stephan, MD, West Hollywood, CA

Ali Noorzad, MD, Los Angeles, CA

Landon Polakof, MD, Los Angeles, CA

Milton T. Little, MD, Los Angeles, CA

Carol Lin, MD, MA, Los Angeles, CA

Geriatric hip fracture patients receiving a preoperative fascia iliaca block take less opioid medications in the preoperative and postoperative periods.

8:30 AM

**Trends and Complications Related to Anesthesia Type in Hip Fracture Surgery—An Analysis of 53,029 Cases from 2007 to 2016**

Joseph A. Gil, MD, Providence, RI

Justin E. Kleiner, BS, Providence, RI

Lindsay R. Kosinski, MD, Providence, RI

Avi Goodman, MD, Providence, RI

Joseph Johnson, MD, Providence, RI

We demonstrated that patients who underwent general anesthesia for their hip fracture surgery had higher morbidity than patients who underwent spinal anesthesia.

8:36 AM

**Early Hip Fracture Surgery is Safe for Patients on Direct Oral Anticoagulants**

Nicholas Kolodychuk, BS, MD, Gilbert, AZ

Michael Wong, River Ridge, LA

Jereme S. Palmer, New Orleans, LA

Brian M. Godshaw, MD, New Orleans, LA

James Mautner, MD, New Orleans, LA

Bradford S. Waddell, MD, Greenwich, CT

Hip fracture patients taking direct oral anticoagulants preoperatively who undergo surgery within 48 hours of admission do not have increased risk of clinically important blood loss.

8:48 AM

**Walking Greater than Five Feet after Hip Fracture Surgery Decreases the Risk of Complications, including Death**

Richard Van Tienderen, MD, El Paso, TX

Isaac Fernandez, MD, El Paso, TX

Dominic Campano, BA, Cibolo, TX

Michael Reich, MD, El Paso, TX

Mai P. Nguyen, MD, El Paso, TX

The ability to ambulate a distance of greater than five feet within 72 hours postoperatively is associated with a significantly lower short term postoperative complication rate.
Tuesday Educational Programs

8:54 AM  
PAPER 023  
Geriatric Pelvic Fractures Present an Opportunity for Better Bone Health Management
David Barton, BS, Roanoke, VA  
Jonathan J. Carmouche, MD, Roanoke, VA  
Geriatric pelvic fractures are a less well known insufficiency fracture associated with a 41% rate of additional fractures within two years. They represent an opportunity to intervene.

9:00 AM  
PAPER 024  
Acute Total Hip Reconstruction Following Displaced Acetabular Fractures in the Elderly
Ross K. Leighton, MD, Halifax, NS, Canada  
Paul J. Duffy, MD, Calgary, AB, Canada  
Amro Al-Houkail, MD, Halifax, NS, Canada  
Acute total hip reconstruction after geriatric acetabular fracture is a safe, low impact operation that allows early weight bearing and mobilization.

9:12 AM  
PAPER 025  
Are There Radiographic Criteria that can Predict Failure of Percutaneous Fixation of Nondisplaced/Valgus Impacted Femoral Neck Fractures?
Christina Kane, MD, Worcester, MA  
Jacob Jo, BA, Worcester, MA  
Judith Siegel, MD, Worcester, MA  
Eric F. Swart, MD, Worcester, MA  
The medial transcervical line is a preoperative x-ray characteristic that correlates with an increased risk of failure when nondisplaced/valgus impacted femoral neck fractures are treated with CRPP.

9:18 AM  
PAPER 026  
Should All Garden I and II Femoral Neck Fractures in the Elderly Be Fixed? Effect of Posterior Tilt on Rates of Subsequent Arthroplasty
Kanu M. Okike, MD, Honolulu, HI  
Ugo Udogwu, BA, New York, NY  
Marckenley Isaac, MS, Laurdale Lakes, FL  
Sheila Sprague, PhD, Hamilton, ON, Canada  
Marc F. Swiontkowski, MD, Minneapolis, MN  
Mohit Bhandari, MD, FRSC, Hamilton, ON, Canada  
Gerard Slobogean, MD, MPH, Baltimore, MD  
FAITH Investigators  
In this study of elderly patients with Garden I and II femoral neck fractures, posterior tilt ≥20 degrees was associated with significantly increased odds of subsequent arthroplasty.

9:24 AM  
PAPER 027  
Higher Complication Rate of Cementless Hemiarthroplasty than Cemented Hemiarthroplasty in Displaced Femoral Neck Fractures in the Elderly
Seung-Hoon Baek, MD, PhD, Daegu, Republic of Korea  
Dong-Hyun Kim, MD, Daegu, Republic of Korea  
Kwang-Hwan Kim, Daegu, Republic of Korea  
Jee Wook Yoon, Daegu, Republic of Korea  
Shin-Yoon Kim, MD, Daegu, Republic of Korea  
Cemented BHA was superior in terms of local complications while cementless BHA has advantages such as shorter operation time. Thus, meticulous surgical attention should be paid during stem insertion.

9:36 AM  
PAPER 028  
Outcomes of Fixation for Periprosthetic Tibia Fractures Around and Below Total Knee Arthroplasty
Michael P. Morwood, MD, Tampa, FL  
Sandra S. Gebhart, MD, Nashville, TN  
Nicholas Zamith, BS, Tampa, FL  
Hassan R. Mir, MD, MBA, Tampa, FL  
Periprosthetic tibia fractures are difficult to treat and have a high risk of nonunion/reoperation even with modern plating techniques. We recommend dual plating for periprosthetic tibia fractures.

9:42 AM  
PAPER 029  
Low Complication Rates among Geriatric Olecranon Fracture Patients Treated with Plate Fixation
Sean T. Campbell, MD, Menlo Park, CA  
Malcolm DeBaun, MD, Menlo Park, CA  
Lawrence H. Goodnough, MD, Redwood City, CA  
Julius A. Bishop, MD, Palo Alto, CA  
Michael J. Gardner, MD, Redwood City, CA  
The complication and reoperation rates following plate fixation of geriatric olecranon fractures was low in this retrospective case series.

9:48 AM  
PAPER 030  
Complications of Early Versus Delayed Total Elbow Arthroplasty in the Treatment of Distal Humerus Fractures
David Macknet, MD, Charlotte, NC  
Patrick G. Marinello, MD, Charlotte, NC  
Bryan J. Loeffler, MD, Charlotte, NC  
Raymond G. Gaston, MD, Charlotte, NC  
Acute treatment of distal humerus fractures with TEA resulted in a higher incidence of reoperation compared to delayed treatment while having similar rates of wound complications and HO.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**PAPER 879**

**9:54 AM**

**Postoperative Shortening of Stable Intertrochanteric Hip Fractures can be Accurately Predicted using a New Preoperative CT-Based Measurement: Cephalomedullary Fixation is Protective against Excessive Shortening**

_Garin Hecht, MD, Maywood, IL_

_Trevor J. Shelton, MD, Sacramento, CA_

_Augustine M. Saiz, MD, Sacramento, CA_

_Parker B. Goodell, MD, Fresno, CA_

_Philip R. Wolinsky, MD, Sacramento, CA_

Measuring the CTP on a preoperative CT is predictive of postoperative shortening after fixation of an IT fracture with a SHS. The CTP has an excellent interobserver reliability.

**Discussion**

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**PAPER PRESENTATIONS 031-045**

**FREE**  **NO TICKET REQUIRED**

**8:00 AM - 10:00 AM**

_Palazzo Ballroom L_

**Sports Medicine I (031-045): Shoulder I**

_Moderators: Carl D. Allred, MD, Tucson, AZ and Cassandra A. Lee, MD, Sacramento, CA_

**8:00 AM**

**PAPER 031**

**Clinical Outcomes Following Anterior Shoulder Stabilization in Overhead Athletes: An Analysis of the MOON Instability Cohort**

_Thai Q. Trinh, MD, Blacklick, OH_

_Micah Naimark, MD, Ann Arbor, MI_

_Asheesh Bedi, MD, Ann Arbor, MI_

_James E. Carpenter, MD, Ann Arbor, MI_

_Chris Robbins, MD, Ann Arbor, MI_

_Keith M. Baumgarten, MD, Sioux Falls, SD_

_Julie Y. Bishop, MD, Columbus, OH_

_Matthew J. Bollier, MD, Iowa City, IA_

_Jonathan T. Bravman, MD, Golden, CO_

_Robert H. Brophy, MD, Chesterfield, MO_

_Charles L. Cox, MD, Nashville, TN_

_Brian F. Feeley, MD, San Francisco, CA_

_John A. Grant, MD, PhD, Ann Arbor, MI_

_Carolyn Hettrich, MD, MPH, Lexington, KY_

_Grant L. Jones, MD, Columbus, OH_

_John E. Kuhn, MD, Nashville, TN_

_Robert G. Marx, MD, New York, NY_

_Eric C. McCarty, MD, Boulder, CO_

_Shannon Ortiz, MPH, Iowa City, IA_

_Matthew V. Smith, MD, Town and Country, MO_

_Brian R. Wolf, MD, Iowa City, IA_

_Alan Zhang, MD, San Francisco, CA_

_Bruce S. Miller, MD, MS, Ann Arbor, MI_

_MOON Shoulder Instability Group_

**Arthroscopic anterior shoulder stabilization in overhead athletes is associated with a low rate of recurrent stabilization surgery and moderate return to overhead athletics.**

**Discussion**

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**8:06 AM**

**PAPER 032**

**Comparable Clinical Outcomes between Knotless and Knot-Tying Anchors for Arthroscopic Repair of Recurrent Anterior Glenohumeral Instability at Mean 4.8 Year Follow Up**

_Isabella T. Wu, BA, Rochester, MN_

_Vishal Desai, BS, Rochester, MN_

_Devin R. Mangold, MD, Rochester, MN_

_Christopher D. Bernard, BS, Rochester, MN_

_Christopher L. Camp, MD, Rochester, MN_

_Diane L. Dahm, MD, Rochester, MN_

_Joaquin Sanchez-Sotelo, MD, Rochester, MN_

_Jonathan D. Barlow, MD, MS, Rochester, MN_

_Aaron J. Krych, MD, Rochester, MN_

This study shows comparable clinical outcomes between knotless and knot-tying anchors for arthroscopic repair of recurrent anterior glenohumeral instability at mean 4.8 year follow up.

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**8:12 AM**

**PAPER 033**

**Revision Shoulder Stabilization in Collision Athletes: Risk Factors and Deterioration of Intra-Articular Findings**

_Connor Montgomery, Dublin, Ireland_

_John Galbraith, MB, Dublin, Ireland_

_Eoghan Hurley, MBCHB, Dublin, Ireland_

_Leo Pauzenberger, MD, Vienna, Austria_

_Hannan Mullett, FRCS (Ortho), Dublin, Ireland_

There was a significant deterioration of intra-articular findings and degenerative changes seen between primary and revision surgeries, the degree to which is a concern in these young athletes.

**Discussion**

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**8:24 AM**

**PAPER 034**

**Does Medicaid Expansion Improve Access to Care for the First Time Shoulder Dislocator?**

_Graham Kirchner, Birmingham, AL_

_Nicholas Rivers, BS, Birmingham, AL_

_Emily F. Baloq, Birmingham, AL_

_Samuel R. Huntley, BS, Lake Worth, FL_

_Brent A. Ponce, MD, Birmingham, AL_

_Eugene W. Brabston, MD, Birmingham, AL_

_Amit Momaya, MD, Birmingham, AL_

The purpose of this study is to access the effect of individual state Medicaid expansion status on access to care for shoulder instability.

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**8:30 AM**

**PAPER 035**

**Opioid Use is Reduced in Patients Treated with NSAIDS After Arthroscopic Shoulder Instability Repair: A Randomized Study**

_Kamali Thompson, Teaneck, NJ_

_Anna Katsman, MD, New York, NY_

_Guillem Gonzalez-Lomas, MD, New York, NY_

_Michael J. Alaia, MD, New York, NY_

_Eric J. Strauss, MD, Scarsdale, NY_

_Laith M. Jazrawi, MD, New York, NY_

_Kirk A. Campbell, MD, New York, NY_

_MOON Shoulder Instability Group_

This study evaluated patients’ level of pain and use of narcotics in patients prescribed Oxycodone Hydrochloride vs. NSAIDs and a Oxycodone Hydrochloride rescue prescription following arthroscopic shoulder instability repair.
8:36 AM  PAPER 036

Prevalence of Clinical Depression Among Patients After Shoulder Stabilization Repair: A Prospective Study
Danielle G. Weekes, MD, Egg Harbor Township, NJ
Weilong J. Shi, MD, Duluth, GA
Nicholas J. Giunta, Somers Point, NJ
Matthew D. Pepe, MD, Linwood, NJ
Bradford S. Tucker, MD, Ocean City, NJ
Michael G. Ciccotti, MD, Philadelphia, PA
Kevin B. Freedman, MD, Bryn Mawr, PA
William D. Emper, MD, Bryn Mawr, PA
Fotios P. Tjoumakaris, MD, Ocean View, NJ

The purpose of the present investigation was to determine the prevalence of major depressive disorder and its effect on outcome in patients undergoing primary arthroscopic shoulder stabilization.

Discussion

8:48 AM  PAPER 037

Return to Sport Following Coracoid Bone Block Transfer for Shoulder Instability: A Systematic Review
Ibrahim M. Nadeem, Hamilton, ON, Canada
Selene Y. Vancolen, Hamilton, ON, Canada
Nolan S. Horner, MD, Ottawa, ON, Canada
Asheesh Bedi, MD, Ann Arbor, MI
Bashar Alolabi, MD, MSc, Oakville, ON, Canada
Moin Khan, FRSC, MD, Burlington, ON, Canada

A systemic review for evidence of return to sports following a coracoid bone block transfer for recurrent shoulder instability, compared to preoperative sport level especially in contact athletes.

8:54 AM  PAPER 038

Return to Sport after Distal Tibial Allograft Glenoid Reconstruction for Recurrent Anterior Shoulder Instability
Joseph Liu, MD, Chicago, IL
Brandon C. Cabargas, BS, Hialeah, FL
Grant Garcia, MD, Mercer Island, WA
Anirudh K. Gowd, Cary, NC
Brian J. Cole, MD, MBA, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL

Distal tibial allograft anterior glenoid reconstruction demonstrates high overall rates of return to sport at five years follow up, but is less consistent for throwing and contact sports.

Discussion

9:00 AM  PAPER 039

Modified Latarjet Procedure without Capsulolabral Repair for the Treatment of Failed Previous Operative Stabilizations in Athletes
Maximiliano Ranalletta, MD, Buenos Aires, Argentina
Agustin Bertona, MD, Buenos Aires, Argentina
Ignacio Tanoira, MD, Buenos Aires, Argentina
Santiago Bongiovanni, Buenos Aires, Argentina
Gaston D. Maingnon, MD, Buenos Aires, Argentina
Luciano A. Rossi, MD, Buenos Aires, Argentina

In athletes with previous failed operative stabilization procedures, modified Latarjet without capsulolabral repair for revision produced excellent outcomes. Most athletes returned to sports.

Discussion

9:12 AM  PAPER 040

Posterior Glenoid Lesions on Magnetic Resonance Imaging in Adolescent Baseball Players
Hyung-Lae Cho, MD, Busan, Republic of Korea
Ki Bong Park, Busan, Republic of Korea
Jiun Kim, Busan, Republic of Korea

Posterior glenoid rounding and periosteal thickening are main internal impingement-induced posterior glenoid lesion in adolescent baseball players. Its location is different from Bennett lesion.

9:18 AM  PAPER 041

Superior Labrum Injuries in Elite Gymnasts: Symptom, Pathology, and Outcome after Surgical Repair
Yasutaka Takeuchi, Funabashi, Japan
Hiroyuki Sugaya, MD, Chiba, Japan
Norimasa Takahashi, MD, Funabashi, Japan
Keisuke Matsuki, MD, Funabashi, Japan
Morihito Tokai, MD, Funabashi, Japan
Takeshi Morioka, MD, Funabashi City, Japan
Shota Hoshika, MD, Funabashi, Japan
Yusuke Ueda, MD, San Jose, CA
Hiroshige Hamada, Funabashi, Japan

Superior labrum injury is a common pathology among elite gymnasts. Predominant symptoms are instability and catching. Arthroscopic repair with physiotherapy can provide excellent functional outcomes.

9:24 AM  PAPER 042

Immediate Changes and Time-Based Recovery of Shoulder ROM and the Quality of Supraspinatus Muscle-Tendon and Long Head Biceps Tendon after Pitching in Youth Baseball Players: How Long is the Rest Needed?
Jihyun Yeo, Goyang, Republic of Korea
Joon Yub Kim, MD, Gyeonggi, Republic of Korea
Sung-Min Rhee, MD, Seongnam, Republic of Korea
Joo-Hyun Park, Seongnam, Republic of Korea
Joo Han Oh, Seoul, Republic of Korea

We confirmed the effect of pitching on shoulder joint, and those changes recovered to pre-pitch levels at 72 hours after pitching. Therefore, three days after pitching is recommended to prevent injuries.

Discussion
9:36 AM PAPER 043
Novel Subpectoral Biceps Tenodesis Technique: A Biomechanical and Clinical Analysis

Thomas K. Stoops, MD, Riverview, FL
Miguel Diaz, MS, Tampa, FL
Tamir Miranowski, DO, Eau Claire, WI
Eldar Abyar, MD, Birmingham, AL
Brandon G. Santoni, PhD, Tampa, FL
Seth I. Gasser, MD, Tampa, FL

This novel subpectoral biceps tenodesis technique biomechanically outperforms solitary unicortical button fixation and is equivalent to that of interference screw fixation, with good clinical outcomes.

9:42 AM PAPER 044
Outcomes and Return to Sport After Pectoralis Major Tendon Repair: A Systematic Review

James Yu, Hamilton, ON, Canada
Cindy X. Zhang, Calgary, AB, Canada
Nolan S. Horner, MD, Ottawa, ON, Canada
Bashar Alolabi, MD, MSc, Oakville, ON, Canada
Moin Khan, FRCSC, MD, Burlington, ON, Canada

A systemic review of the literature to determine the outcomes for pectoralis major tendon repair and return to activity.

9:48 AM PAPER 045
Shoulder Surgery in Professional Baseball Players

Peter N. Chalmers, MD, Salt Lake City, UT
Brandon Erickson, MD, New York, NY
John D’Angelo, BA, New York, NY
Anthony A. Romeo, MD, Chicago, IL

Among professional baseball players who undergo shoulder surgery, overall return to surgery rates are 56%, with only 41% able to return to the same level of play as before surgery.

8:06 AM PAPER 047
Pharmacologic Treatment of Osteoporosis in High Risk Individuals Identified by FRAX Score Prevents Proximal Junctional Kyphosis

Nicholas S. Andrade, BS, Baltimore, MD
Khaled M. Kebaish, MD, Baltimore, MD
Brian J. Neuman, MD, Baltimore, MD

Treatment of patients with a Fracture Risk Assessment Tool (FRAX) score of at least 8.6% with any of bisphosphonates, raloxifene, or teriparatide resulted in a 74.1% lower risk of developing PJK.

8:12 AM PAPER 048
High Altitude is an Independent Risk Factor for Developing a Pulmonary Embolism, But Not Deep Vein Thrombosis Following a 1 to 2 Level Posterior Lumbar Fusion

Jonathan I. Sheu, BS, Miami, FL
Chester J. Donnally, MD, Miami, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Rushabh Vakharia, MD, Fort Lauderdale, FL
Dhanur Damodar, MD, Miami, FL
Joseph P. Gjolaj, MD, Miami Beach, FL

High altitude is an independent risk factor for developing a pulmonary embolism, but not deep vein thrombosis following a 1 to 2 level posterior lumbar fusion.

8:24 AM PAPER 049
Upper Thoracic Versus Lower Thoracic Upper Instrumented Vertebra for Treatment of Adult Spinal Deformity: Surgical Decision Making and Patient Outcomes

Alan H. Daniels, MD, Providence, RI
Daniel Reid, MD, MPH, Cranston, RI
Wesley M. Durand, BS, Providence, RI
D. Kojo Hamilton, Pittsburgh, PA
Peter G. Passias, MD, Westbury, NY
Han Jo Kim, MD, New York City, NY
Themistocles S. Protopsaltis, MD, New York, NY
Virginia Lafage, PhD, New York, NY
Justin S. Smith, MD, Charlotteville, VA
Christopher J. Shaffrey, MD, Charlotteville, VA
Munish C. Gupta, MD, St. Louis, MO
Eric O. Klineberg, MD, Sacramento, CA
Frank J. Schwab, MD, New York, NY
Douglas C. Burton, MD, Kansas City, KS
Robert S. Bess, MD, Castle Rock, CO
Christopher Ames, MD, San Francisco, CA
Robert A. Hart, MD, Seattle, WA
International Spine Study Group

Osteoporosis, female sex, younger age, and larger pre-op thoracic kyphosis are associated with the decision to fuse to the upper thoracic spine, which in turn is associated with lower two-year PJK rates.
8:30 AM  PAPER 050
The “Kickstand Rod” Technique for Correction of Coronal Imbalance in Pediatric and Adult Spinal Deformity Patients

Melvin Makhni, MBA, MD, New York, NY
Meghan Cerpa, MPH, New York, NY
Martin H. Pham, MD, Los Angeles, CA
John Stelatycki, MD, New York, NY
Eduardo C. Beauchamp, MD, Minneapolis, MN
Lawrence G. Lenke, MD, New York, NY

The kickstand rod technique is a safe and effective method for correction of coronal imbalance in spinal deformity patients.

8:36 AM  PAPER 051
Surgical Outcomes in Rigid Versus Flexible Cervical Deformities

Themistocles S. Protopsaltis, MD, New York, NY
Nicholas Stekas, BS, MS, New York, NY
Justin S. Smith, MD, Charlottesville, VA
Alexandra Soroceanu, MD, Halifax, NS, Canada
Renaud Lafage, New York, NY
Alan H. Daniels, MD, Providence, RI
Han Jo Kim, MD, New York City, NY
Peter G. Passias, MD, Westbury, NY
Gregory M. Mundis, MD, San Diego, CA
Eric O. Klineberg, MD, Sacramento, CA
D. Kojo Hamilton, Pittsburgh, PA
Munish C. Gupta, MD, St. Louis, MO
Virginie Lafage, PhD, New York, NY
Robert A. Hart, MD, Seattle, WA
Frank J. Schwab, MD, New York, NY
Douglas C. Burton, MD, Kansas City, KS
Robert S. Bess, MD, Castle Rock, CO
Christopher I. Shaffrey, MD, Charlottesville, VA
Christopher Ames, MD, San Francisco, CA
International Spine Study Group

Patients with rigid CD required longer fusions and higher osteotomy grades but had similar improvements in HRQL without higher complication rates.

8:48 AM  PAPER 052
The Impact of Sagittal Balance and Spinopelvic Parameters on the Development of Proximal Junctional Kyphosis Following Posterior Spinal Fusion for Adult Spinal Deformity

Bryce A. Basques, MD, Chicago, IL
Michael T. Nolte, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Kamran Movassagh, MD, Fresno, CA
Dennis P. McKinney, Chicago, IL
Joseph Michalski, BS, MPH, Commack, NY
Howard S. An, MD, Chicago, IL
Christopher J. DeWald, MD, Chicago, IL

Postoperative pelvic incidence-lumbar lordosis mismatch of >10 degrees resulted in proximal junctional kyphosis at 4 to 16 times the rates of mismatch of <10 degrees following posterior spinal fusion.

8:54 AM  PAPER 053
Pelvic Incidence Affects Age-Adjusted Alignment Outcomes in a Population of Adult Spinal Deformity

Peter G. Passias, MD, Westbury, NY
Cole Bortz, BA, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Samantha Horn, BA, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Carl B. Paulino, MD, Brooklyn, NY
Rivka C. Ihejirika, MD, New York, NY
Michael C. Gerling, MD, Brooklyn, NY
Thomas J. Errico, MD, New York, NY

Patients with high PI reached ideal postop age-adjusted PT alignment at a significantly lower rate than patients with normative and low pelvic incidence. Height had no impact on alignment outcomes.

9:00 AM  PAPER 054
A 34-Year Longitudinal Study of Sagittal Spinopelvic Alignment and Proceeding Factors of Adult Spinal Deformity

Mutsuya Shimizu, MD, Asahikawa, Japan
Tetsuya Kobayashi, Asahikawa, Japan
Shizuo Jimbo, MD, PhD, Asahikawa, Japan
Issei Senoo, MD, Asahikawa, Japan
Hiroshi Ito, MD, Asahikawa, Japan

There were not significant differences of parameters of TK, PI in 34 years. In our study, female had more changes of CL, PI-LL, SVA, Schwab-SM, Gap-Score, female was one of the proceeding factors of adult spinal deformity. Gap score at baseline was most evaluated proceeding factor of adult spinal deformity.

9:12 AM  PAPER 055
The Relationship of Static Spinopelvic Parameters with Dynamic Biomechanical Parameters Measured by Gait and Balance Analyses in Patients with Adult Degenerative Scoliosis

Ram Haddas, MSc, PhD, Plano, TX
Xiaobang Hu, PhD, Plano, TX
Isador H. Lieberman, MD, MBA, Plano, TX

This study demonstrated a strong correlation between biomechanical parameters as measured with objective gait and balance analyses and spinopelvic parameters in adult degenerative scoliosis patients.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Recovery Kinetics following Spinal Deformity Correction: A Comparison of Isolated Cervical, Thoracolumbar, and Combined Deformity Morphometries

Peter G. Passias, MD, Westbury, NY
Frank A. Segreto, BS, Oakdale, NY
Virginie Lafage, New York, NY
Breton G. Line, BS, Denver, CO
Justin K. Scheer, MD, San Francisco, CA
Cole Bortz, BA, New York, NY
Samantha Horn, BA, New York, NY
Gregory M. Mundis, MD, San Diego, CA
D. Kojo Hamilton, Pittsburgh, PA
Han Jo Kim, MD, New York City, NY
Bassel Diebo, MD, Brooklyn, NY
Munish C. Gupta, MD, St. Louis, MO
Eric O. Klineberg, MD, Sacramento, CA
Douglas C. Burton, MD, Kansas City, KS
Robert A. Hart, MD, Seattle, WA
Frank J. Schwab, MD, New York, NY
Christopher I. Shaffrey, MD, Charlottesville, VA
Christopher Ames, MD, San Francisco, CA
Robert S. Bess, MD, Castle Rock, CO
International Spine Study Group

Cervical deformity patients exhibited quicker rates of immediate postoperative recovery, despite an overall worse two-year ODI-NDI recovery, relative to thoracolumbar and combined deformity patients.

Sway and Neuromuscular Activity Changes in Adult Degenerative Scoliosis Patients Pre- and Post-Surgery Compared to Controls

Ram Haddas, MSc, PhD, Plano, TX
Isador H. Lieberman, MD, MBA, Plano, TX

Although surgical alignment improved ADS functional parameters during a dynamic balance test, these parameters approached but did not fully achieve control parameters when measured three months after surgery.

Clinical Outcomes, Complications, and Cost-Effectiveness for Surgical Correction of Spinal Deformity in Adults over 70 Years Old: A Propensity Score–Matched Analysis

Mitsuru Yagi, MD, PhD, Tokyo, Japan
Nobuyuki Fujita, Tokyo, Japan
Eijiro Okada, MD, PhD, Tokyo, Japan
Satoshi Suzuki, MD, PhD, Ichikawa, Japan
Narihito Nagoshi, Toronto, ON, Canada
Osahiko Tsuji, MD, PhD, Tokyo, Japan
Takashi Asazuma, MD, PhD, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan
Kota Watanabe, MD, PhD, Tokyo, Japan
Keio Spine Research Group

Propensity-score matched comparisons showed that reconstruction surgery for ASD was less cost-effective in geriatric patients than in middle-aged patients.

Surgical Complications and Revision Rate in Middle Age to Elderly Adult Spinal Deformity Surgery – Minimum 5-Years Follow Up

Mitsuru Yagi, MD, PhD, Tokyo, Japan
Nobuyuki Fujita, Tokyo, Japan
Eijiro Okada, MD, PhD, Tokyo, Japan
Narihito Nagoshi, Toronto, ON, Canada
Osahiko Tsuji, MD, PhD, Tokyo, Japan
Satoshi Suzuki, MD, PhD, Ichikawa, Japan
Takashi Asazuma, MD, PhD, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan
Kota Watanabe, MD, PhD, Tokyo, Japan
Keio Spine Research Group

The overall complication rate was 59% and the revision rate was 23% in surgery for middle to elderly ASD over 6.3 years after surgery. Vast majority of late complication was implant related.

Analysis of Factors Associated with Unplanned Reoperation within 90 Days of Adult Spinal Deformity Surgery

Tina Raman, MD, Baltimore, MD
Aaron J. Buckland, FRACS, MBBS, New York, NY
Thomas J. Errico, MD, New York, NY

Fusion to the pelvis, Grade I and II Schwab osteotomies, and transforaminal lumbar interbody fusion are associated with early reoperation within 90 days after adult deformity surgery.

The Aging Surgeon

Moderator: R. Dale Blasier, MD, Little Rock, AR
Ralph B. Blasier, MD, JD, Escanaba, MI

Surgeons may not recognize deterioration of their physical and cognitive function and skills with age. It is best to be aware and develop an exit strategy.
**SYMPOSIUM**

**10:30 AM - 12:30 PM**

**Palazzo Ballroom E**

◆ **B Surgeon Well Being for the Benefit of the Patient: How Can We Become Better for Everyone Else?**
  
  *Moderator: Suken A. Shah, MD, Wilmington, DE*

We are in a demanding profession; see how the threats of burnout, overuse injuries and O/R hazards can shorten our careers and how coaching, mentoring, teams and leadership can help us. Enjoy practical skills and advice from experts that you can take home and start using tomorrow...put the oxygen mask on yourself before you can help others.

I. **Professional Burnout: Scope of the Problem and Avoidance**
   *Todd J. Albert, MD, New York, NY*

II. **Lifelong Learning and How**
    *Michael Daubs, MD, Las Vegas, NV*

III. **Reduction of Radiation Exposure to Surgeon and Patient**
    *John R. Dimar II, MD, Louisville, KY*

IV. **Peak Performance 1: Managing Your Time, Energy and Priorities**
    *Jack M. Flynn, MD, Philadelphia, PA*

V. **Managing Family Relationships and Work-Life Balance**
    *A. Noelle Larson, MD, Rochester, MN*

VI. **Overuse Syndromes and New Technology to Prevent Them**
    *Baron Lonner, MD, New York, NY*

VII. **The Benefits of Global Outreach and Philanthropy**
    *Gregory M. Mundis, MD, San Diego, CA*

VIII. **Coaching / Mentoring – The Surgeon as a Professional Athlete**
     *Peter O. Newton, MD, San Diego, CA*

IX. **Building High Functioning, Resilient Teams**
    *Rajiv K. Sethi, MD, Seattle, WA*

X. **Peak Performance 2: Lessons Learned from Science and Sociology**
    *Michael G. Vitale, MD, MPH, Irvington, NY*

XI. **Hobbies and Passions: How to Really Relax After Work**
    *Burt Yaszay, MD, San Diego, CA*

**INSTRUCTIONAL COURSE LECTURES**

**10:30 AM - 12:30 PM**

◆ **121**

**Difficult Revision Total Hip Arthroplasties Through an Anterior Approach: Extensile Expansions of Anterior Approach for Revisions, Complex Deformities, Conversions, and Periprosthetic Fractures**

  *Moderator: Joseph T. Moskal, MD, Roanoke, VA*

  *Theodore T. Manson, MD, Bel Air, MD*

  *J. Bohannon Mason, MD, Charlotte, NC*

  *John L. Masonis, MD, Charlotte, NC*

  Designed for the surgeon already using the direct anterior approach for routine primary and simple revision hip arthroplasties, this ICL teaches how to expand the approach both proximally and distally for hip reconstructions with complex deformities, as well as perform femoral and acetabular revisions through a direct anterior approach. Cementless and cemented stem removal, extended trochanteric osteotomy, treatment of periprosthetic fractures, intra-pelvic extension of the approach as well as managing pelvic discontinuity also are covered. At the conclusion of the course, participants have the cognitive skills for extension of the surgical approach and the conceptual framework for incorporation of revision direct anterior hip replacement into their practice.

◆ **122**

**The Modern Total Knee Arthroplasty: What to Make of All of these Options?**

  *Moderator: Brett R. Levine, MD, Chicago, IL*

  *John J. Callaghan, MD, Iowa City, IA*

  *Alejandro Gonzalez Della Valle, New York, NY*

  *Steven J. MacDonald, MD, London, ON, Canada*

  *R. Michael Meneghini, MD, Fishers, IN*

  This ICL reviews the design and biomaterial aspects of modern total knee arthroplasty (TKA) implants including outcomes, indications, and complications associated with these devices.

◆ **123**

**Nuts and Bolts of Foot and Ankle Injuries in the Athlete**

  *Moderator: Steven L. Haddad, MD, Glenview, IL*

  *Robert B. Anderson, MD, Charlotte, NC*

  *Gregory C. Berlet, MD, Westerville, OH*

  *Anand Vora, Lake Forest, IL*

  This course provides an overview of how injury management has evolved over time to improve outcome and also allow the athlete a safe and early return to activity. Faculty discusses new innovations in treatment options for specific injuries and also concentrates on postoperative care and rehabilitation techniques to facilitate return to sport. Specific attention is given not only to the serious athlete, but also the weekend warrior and dancers.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Peripheral Nerve Issues after Common Orthopaedic Surgeries
Moderator: Christopher J. Dy, MD, MPH, St. Louis, MO
Milton T. Little, MD, Los Angeles, CA
Benjamin A. McArthur, MD, Austin, TX
Moira M. McCarthy, MD, New York, NY

Course faculty present an appraisal of risk factors, prognosis, and treatment options for peripheral nerve issues after common orthopaedic procedures, from the perspectives of both the referring surgeon and treating sub-specialist.

Mimickers of Hand and Upper Extremity Infections – How to Avoid Misdiagnosis and Mistreatment
Moderator: Robert W. Wysocki, MD, Chicago, IL
John J. Fernandez, MD, Winnetka, IL
Levi L. Hinkelman, MD, Ada, MI
Peter J. Stern, MD, Cincinnati, OH

Course faculty compares and contrasts the clinical features, diagnostic findings, and treatment principles of several conditions that mimic an upper extremity infection.

Managing Adult Pattern Trauma in the Pediatric Patient: Tips for Success
Moderator: Nirav K. Pandya, MD, Oakland, CA
Keith D. Baldwin, MD, Philadelphia, PA
Jason Jagodzinski, MD, Oakland, CA
Coleen S. Sabatini, MD, MPH, Oakland, CA

Adult pattern trauma is seen increasingly in pediatric patients. Current evidence and treatment options are reviewed for these challenging injuries.

Risk Evaluation and Management Strategies for Prescribing Opioids
Moderator: Robert R. Slater, MD, Folsom, CA
Laurel A. Beverley, MD, MPH, Cleveland, OH
Runjan Gupta, MD, Orange, CA
Michael Marks, MD, MBA, Westport, CT
David L. Nelson, MD, Greenbrae, CA

This course details the Food and Drug Administration’s risk valuation and mitigation strategy opioid program, assists physicians in safe narcotic dosing, and outlines risks of inappropriate narcotics prescribing. This course is organized by the AAOS Medical Liability Committee.

Demystifying Winging of the Scapula and Scapulothoracic Dysfunction
Moderator: Bassem T. Elhassan, MD, Rochester, MN
George S. Athwal, MD, London, ON, Canada
W. Benjamin Kibler, MD, Lexington, KY
Peter J. Millett, MD, MSc, Vail, CO

The purpose of this symposium is to provide the participants with an update on the evaluation and management of scapulothoracic dysfunction (dyskinesia, snapping scapula syndrome, winging).
TuesdaY Educational Programs

133
Tibial Plafond Fractures
Moderator: Utku Kandemir, MD, San Francisco, CA
Jackson Lee, MD, Los Angeles, CA
Saam Morshed, MD, San Francisco, CA
Walter W. Virkus, MD, Zionsville, IN

Tibial plafond fractures are challenging. Multistep, detailed planning of treatment is necessary to achieve the best outcome possible.

Revision Total Knee Arthroplasty: How to Avoid Getting in Over Your Head – Cased-Based Presentations
Moderator: Giles R. Scuderi, MD, New York, NY
David Backstein, MD, Toronto, ON, Canada
Michael P. Bolognesi, MD, Durham, NC
Henry D. Clarke, MD, Phoenix, AZ
Fred D. Cushner, MD, New York, NY
Douglas A. Dennis, MD, Denver, CO
William L. Griffin, MD, Charlotte, NC
Gwo-Chin Lee, MD, Philadelphia, PA
Adolph V. Lombardi, Jr, MD, New Albany, OH
Mark W. Pagnano, MD, Rochester, MN

This course instructs attendees on reasons for failure, how to develop a systematic surgical plan for revision total knee arthroplasty, and establishing a knowledge of complex situations.

Complex Shoulder Arthroplasty: Primary and Revision, Anatomic and Reverse, Three-Dimensional Planning – When and How?
Moderator: Asheesh Bedi, MD, Ann Arbor, MI
David M. Dines, MD, Uniondale, NY
Joshua S. Dines, MD, New York, NY
Michael T. Freehill, MD, Ann Arbor, MI
Evan S. Lederman, MD, Phoenix, AZ
Xinning Li, MD, Weston, MA
Bradford O. Parsons, MD, New York, NY
Anthony A. Romeo, MD, Chicago, IL
John M. Tokish, MD, Scottsdale, AZ
Gilles Walch, MD, Lyon, France
Jon J. Warner, MD, Boston, MA

This course provides a case-based, comprehensive review of shoulder arthroplasty. Various preoperative conditions with deformity, glenoid, and/or humeral bone loss, and failed primary procedures are presented. A discussion of the appropriate work-up, imaging, considerations of preoperative templating, prosthetic selection, and surgical technique are reviewed and debated by key opinion leaders.

10:30 AM - 12:30 PM
Room 4401
Shoulder and Elbow I (061-075): Rotator Cuff Part I
Moderators: Stephen C. Weber, MD, Silver Spring, MD

10:30 AM
There is Similar Incidence of Bilateral Magnetic Resonance Imaging Abnormalities in Individuals with Unilateral Shoulder Pain
Jonathan P. Braman, MD, Minneapolis, MN
Rodrigo P. Barreto, PT, Sao Carlos, Brazil
Larissa P. Ribeiro, MS, PT, Sao Carlos, Brazil
Paula M. Ludewig, PhD, Saint Paul, MN
Paula R. Camargo, PT, Sao Carlos, Brazil

When bilateral MRI scans of patients with unilateral shoulder symptoms were blindly reviewed, findings were similar except for glenohumeral arthritis and full-thickness rotator cuff tears.

10:36 AM
The Association of Perioperative Glycemic Control with Adverse Outcomes after Arthroscopic Rotator Cuff Repair
Jourdan M. Cancienne, MD, Charlottesville, VA
James E. Christensen, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

The risk of postoperative infection following arthroscopic RCR in patients with diabetes mellitus increases as the perioperative HbA1c increases.

10:42 AM
Injections Prior to Rotator Cuff Repair Increase Rotator Cuff Revision Rates
Alexander Weber, MD, Los Angeles, CA
Nicholas A. Trasolini, MD, Long Beach, CA
Erik Mayer, BS, Los Angeles, CA
Anthony Essilfie, MD, Los Angeles, CA
C. Thomas Vangsness, MD, Los Angeles, CA
Seth C. Gamradt, MD, Los Angeles, CA
James E. Tibone, MD, Los Angeles, CA
Hyunwoo P. Kang, MD, Los Angeles, CA

Ipsilateral shoulder injections before RCR surgery are associated with higher revision RCR rates. There is a dose- and time-dependence to this finding.

10:54 AM
Perioperative Serum 25-Hydroxyvitamin D Levels Affect Revision Surgery Rates after Arthroscopic Rotator Cuff Repair
Jourdan M. Cancienne, MD, Charlottesville, VA
Stephen F. Brockmeier, MD, Charlottesville, VA
Michelle Kew, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

The present study found a significant association between serum 25-hydroxyvitamin D deficiency and insufficiency and the rate of revision rotator cuff surgery after primary arthroscopic repair.

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11:00 AM  PAPER 065
Intra-Articular Injection of Steroids in the Early Postoperative Period Does Not Affect the Re-Tear Rate after Arthroscopic Rotator Cuff Repair
Won Yong Lee, MD, Charlottesville, VA
Sung-Jae Kim, MD, Seoul, Republic of Korea
Yong-Min Chun, MD, PhD, Seoul, Republic of Korea
Intra-articular corticosteroid injections in the early postoperative period provided satisfactory pain relief and ROM improvement without increasing the re-tear rate or deteriorating clinical outcomes.

11:06 AM  PAPER 066
◆ No Functional Difference Between Three and Six Weeks of Immobilization after Arthroscopic Rotator Cuff Repair: A Prospective Randomized Controlled Non-Inferiority Trial
Kjersti Jenssen, Oslo, Norway
Kirsten Lundgreen, Oslo, Norway
Jan Erik Madsen, MD, PhD, Oslo, Norway
Rune Kvakestad, Oslo, Norway
Are H. Pripp, Oslo, Norway
Sigbjørn Dimmen, MD, Haslum, Norway
No functional difference between three and six weeks of immobilization after arthroscopic rotator cuff repair.

Discussion

11:18 AM  PAPER 067
Rotator Cuff Tear Concomitant with Shoulder Stiffness is Associated with Lower Re-Tear Rate After One-Stage Arthroscopic Surgery
In-Bo Kim, MD, Busan, Republic of Korea
Dong-Wook Jung, MD, Busan, Republic of Korea
RCT concomitant with shoulder stiffness shows a more favorable rotator cuff status, a lower re-tear rate, and similar clinical outcome after simultaneous arthroscopic repair and capsular release.

11:24 AM  PAPER 068
The Impact of Osteoporosis and Bisphosphonate Use on Revision Rate after Rotator Cuff Repair
Jourdan M. Cancienne, MD, Charlottesville, VA
Stephen F. Brockmeier, MD, Charlottesville, VA
Michelle Kew, MD, Charlottesville, VA
Matthew J. Deasey, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA
Osteoporosis is a risk factor for higher revision rates after arthroscopic rotator cuff repair; bisphosphonate use does not appear to mitigate this increased risk.

11:30 AM  PAPER 069
Delay to Arthroscopic Rotator Cuff Repair is Associated with Increased Risk of Revision Rotator Cuff Surgery
Michael Fu, MD, MS, New York, NY
Evan O’Donnell, MD, New York, NY
William W. Schairer, MD, New York, NY
Samuel A. Taylor, MD, New York, NY
Joshua S. Dines, MD, New York, NY
David M. Dines, MD, Uniondale, NY
Russell F. Warren, MD, New York, NY
Lawrence V. Gulotta, MD, New York, NY
Delayed rotator cuff repair beyond 12 months of diagnosis is associated with an increased risk of undergoing subsequent revision rotator cuff repair while controlling for age and comorbidity burden.

Discussion

11:42 AM  PAPER 070
Tear Characteristics and Surgeon Influence Repair Technique and Suture Anchor Usage in Repair of Superior-Posterior Rotator Cuff Tendon Tears
Eric T. Ricchetti, MD, Cleveland, OH
Sambit Sahoo, MD, PhD, Cleveland, OH
Alex Zajichek, MS, Cleveland, OH
Gregory J. Strnad, MS, Lyndhurst, OH
Kurt P. Spindler, MD, Lyndhurst, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH
Kathleen Derwin, PhD, Cleveland, OH
Larger, full thickness rotator cuff tears involving two or more tendons were significantly associated with performing double row repair over a single row repair and using more suture anchors.

11:48 AM  PAPER 071
The Single Assessment Numeric Evaluation (SANE) Significantly Correlates with Other Shoulder-Specific Quality-of-Life Scores
Keith M. Baumgarten, MD, Sioux Falls, SD
Brett Barthman, Milford, IA
Julie Y. Bishop, MD, Columbus, OH
Matthew J. Bollier, MD, Iowa City, IA
Jonathan T. Bravman, MD, Golden, CO
Robert H. Brophy, MD, Chesterfield, MO
Charles L. Cox, MD, Nashville, TN
Brian T. Feeley, MD, San Francisco, CA
John A. Grant, MD, PhD, Ann Arbor, MI
Carolyn Hettrich, MD, MPH, Lexington, KY
Grant L. Jones, MD, Columbus, OH
John E. Kuhn, MD, PhD, Nashville, TN
ChunBong B. Ma, MD, San Francisco, CA
Robert G. Marx, MD, New York, NY
Eric C. McCarty, MD, Boulder, CO
Bruce S. Miller, MD, Ann Arbor, MI
Matthew V. Smith, MD, Town and Country, MO
Brian R. Wolf, MD, Iowa City, IA
Rick W. Wright, MD, St. Louis, MO
Alan Zhang, MD, San Francisco, CA
MOON Shoulder Instability Group
There was excellent correlation between the SANE and the WORC, WOOS, WOSI, and the SST. There was strong-moderate correlation between the SANE and the ASES for all scores.
Tuesday Educational Programs

**Outcome of Arthroscopically Assisted Lower Trapezius Transfer to Reconstruct Massive Irreparable Posterior-Superior Rotator Cuff Tears**
Bassem T. Elhassan, MD, Rochester, MN
Eric R. Wagner, MD, Atlanta, GA
Joaquin Sanchez-Sotelo, MD, Rochester, MN

Arthroscopic assisted lower trapezius transfer may lead to a good outcome in patients with massive irreparable posterior-superior rotator cuff tears, including patients with pseudoparalysis.

**Does Preoperative Adhesive Capsulitis (Frozen Shoulder) Combined with Rotator Cuff Tear Alter the Clinical Outcome after Arthroscopic Repair?**
Sanghoon Chae, Seoul, Republic of Korea
Jeung Y. Jeong, MD, Seoul, Republic of Korea
Jae Woo Shim, Seoul, Republic of Korea
Hyunbo Sim, Seoul, Republic of Korea
Joochan Kim, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea

Preoperative frozen shoulder had a positive effect on cuff healing but had a negative effect on most of the functional outcomes, including ROM up to one year postoperatively.

**Five-Year Surgical Outcomes of 2,600 Rotator Cuff Repairs**
Anthony Maher, Auckland, New Zealand
Warren B. Leigh, MD, Auckland, New Zealand
Matthew Brick, MD, Auckland, New Zealand
Simon Young, MD, FRACS, Auckland, New Zealand
Michael Caughey, Auckland, New Zealand

This presents the five-year outcome data from over 2,600 rotator cuff repairs from across New Zealand.

**Do Patient Characteristics Implicated by Basic Science Predict Rotator Cuff Repair Revision Surgery?**
Evan O'Donnell, MD, New York, NY
Michael Fu, MD, MS, New York, NY
William W. Schairer, MD, New York, NY
Samuel A. Taylor, MD, New York, NY
Joshua S. Dines, MD, New York, NY
David M. Dines, MD, Uniondale, NY
Russell F. Warren, MD, New York, NY
Lawrence V. Gulotta, MD, New York, NY

While overall comorbidity burden was not associated with revision RCR, certain patient characteristics including smoking, obesity, hyperlipidemia, and Vitamin-D deficiency predicted revision surgery.

Discussion

**A Different Approach to Preventing Thrombosis (ADAPT): A Randomized Trial Comparing Bleeding Events after Orthopaedic Trauma with Aspirin to Low Molecular Weight Heparin Prophylaxis**
Bryce Haac, MD, Baltimore
Nathan N. O’Hara, Baltimore, MD
Peter Z. Berger, Baldwin, MD
Daniel Connelly, BS, Baltimore, MD
Yasmin Degani, MPH, Baltimore, MD
Theodore T. Manson, MD, Bel Air, MD
Herman Johal, MD, Waterdown, ON, Canada
Dimitrius P. Marinos, BS, Baltimore, MD
Daniel Mascarenhas, BS, Cinnaminson, NJ
George B. Reahi, BS, Towson, MD
Richard Van Besien, BA, Baltimore, MD
Thomas Scalea, FACS, MD, Baltimore, MD
Deborah M. Stein, MD, MPH, Baltimore, MD
Robert V. O’Toole, MD, Lutherville, MD
ADAPT Study Group

In this randomized clinical trial that included 329 patients (164 LMWH, 165 aspirin), 105 patients had a bleeding event with no significant difference between regimens (32% vs. 32%).

**Non-Preventable Venous Thromboembolism Following Pelvic and Lower Extremity Long Bone Trauma Occur Despite Adherence to Modern Prophylactic Protocols**
Jason A. Lowe, MD, Tucson, AZ
Sean M. Mitchell, MD, Phoenix, AZ
Sumit K. Agarwal, MBA, MBBS, Phoenix, AZ
Clifford B. Jones, MD, FACS, Phoenix, AZ

Despite modern VTE prophylaxis protocols, non-preventable VTEs occur in 0.82% of orthopaedic trauma patients. The highest rates were seen in pelvis ORIF (1.7%) followed by femoral IMN (1.3%).

**Assessment of Macro- and Microcirculatory Parameters on Extremities in Polytraumatized Pig Model**
Sascha Halvachizadeh, MD, Zurich, Switzerland
Yannik Kalbas, Aachen, Germany
Michel Teuben, Zurich, Switzerland
Zhi Qiao, Aachen, Germany
Nikola Cesariovic, DVM, PhD, Zurich, Switzerland
Paolo Cinelli, PhD, Zurich, Switzerland
Hans-Christoph Pape, MD, Zurich, Switzerland
Roman Pfeifer, MD, Zurich, Germany

The goal was to investigate how local microcirculation correlates with systemic shock parameters.

Discussion

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11:00 AM  PAPER 080
Predicting Mortality after Trauma using Electronic Medical Record Data: A Retrospective Analysis of 20,457 Patient Encounters at a Level I Trauma Center

Hayden N. Box, MD, Dallas, TX
John D. Watkins, MS, Dallas, TX
Ryan W. Fairchild, MD, Dallas, TX
Dustin B. Rinehart, MD, Dallas, TX
Michael Cripps, MD, Dallas, TX
Manjula Julka, MBA, MD, Dallas, TX
Adam J. Starr, MD, Dallas, TX

We developed a time-dependent algorithm that utilizes electronic medical record data to predict mortality in trauma patients.

11:06 AM  PAPER 081
The Military Extremity Trauma Amputation/Limb Salvage (METALS) Study: Outcomes of Amputation Versus Limb Salvage Following Major Upper Extremity Trauma

Stuart L. Mitchell, MD, Baltimore, MD
COL (ret) Roman A. Hayda, MD, Providence, RI
Andrew Chen, MD, MPH, Charlotte, NC
Anthony R. Carlini, MS, Baltimore, MD
James R. Ficke, MD, Baltimore, MD
William C. Doukas, MD, Annapolis, MD
Ellen Mackenzie, Baltimore, MD
Harold M. Frisch, MD, Asheville, NC

Combat-related major UEIs are debilitating in terms of function and psychosocial health, but long-term outcomes between those treated by amputation or limb salvage appear to be equivalent.

11:18 AM  PAPER 082
Systemic Absorption and Nephrotoxicity Associated with Topical Vancomycin Powder for Fracture Surgery

Robert V. O'Toole, MD, Lutherville, MD
Yasmin Degani, MPH, Baltimore, MD
Anthony R. Carlini, MS, Baltimore, MD
Renan C. Castillo, MD, Baltimore, MD
Manjari Joshi, Baltimore, MD
Ellen Mackenzie, Baltimore, MD

Topical vancomycin powder is a proposed method to reduce surgical site infection in orthopaedic fracture surgery. This study sought to measure vancomycin serum levels and nephrotoxicity in this group.

11:24 AM  PAPER 083
Single Stage Osteomyelitis Treatment with Antibiotic Impregnated Calcium Sulphate Beads: Early Results of a Case Series

Panayiotis Souroullas, MBCHB, MD, Leeds, United Kingdom
Abhishek Chaturvedi, MD, Hull, United Kingdom
Hemant K. Sharma, FRCS (Orth), Hessle, United Kingdom
Gavin Barlow, Hull, United Kingdom
Joanna L. Bates, MBCHB, MRCSED, Hull, United Kingdom

Positive results of a single stage surgical approach to the management of chronic osteomyelitis are possible, using antibiotic impregnated calcium sulphate pellets demonstrating no disease recurrence.

11:30 AM  PAPER 084
The Effect of Time to Irrigation on the Rate of Reoperation in Open Fractures: A Propensity Score-Based Analysis of the Fluid Lavage of Open Wounds (FLOW) Study

Herman Johal, MD, Waterdown, ON, Canada
Daniel Axelrod, MD, Hamilton, ON, Canada
Sheila Sprague, PhD, Hamilton, ON, Canada
Brad Petrisor, MD, Hamilton, ON, Canada
Kyle J. Jeray, MD, Greenville, SC
Diane Heels-Ansdell, MSc, Hamilton, ON, Canada
Sofia Bzovsky, Hamilton, ON, Canada
Mohit Bhandari, MD, FRSC, Hamilton, ON, Canada

In this study, timing of wound irrigation was not associated with reoperation for infection or healing complications one year post-surgery in open fracture patients, when accounting for other variables.

11:42 AM  PAPER 085
Development of Posttraumatic Stress Disorder in Multiple Trauma: A Long-Term Observational Study

Sascha Halvachizadeh, MD, Zurich, Switzerland
Henrik Teuber, DO, Dietlikon, Switzerland
Florin Allemann, MD, Zürich, Switzerland
Roland Von Känel, MD, Zürich, Switzerland
Hans-Christoph Pape, MD, Zürich, Switzerland
Roman Pfeifer, MD, Zürich, Switzerland

This study presents the psychological long-term complications more than 28 years following multiple injury. This study shows the long-term impairment of general health and psychological complications.

11:48 AM  PAPER 086
A Short Course of Non-Steroidal Antiinflammatory Drugs is Associated with Accelerated Fracture Healing in a Novel Translational Rat Fracture Model

Alejandro Marquez-Lara, MD, Winston-Salem, NC
Ian Hutchinson, MD, Albany, NY
Kerry Danelson, PhD, Winston-Salem, NC
Anna N. Miller, MD, St. Louis, MO
Thomas L. Smith, PhD, Winston-Salem, NC

Short-term exposure to NSAID was associated with faster bone healing in a translational animal fracture model.
**Tuesday Educational Programs**

**11:54 AM**

**PAPER 087**

**Opioid Use in the 90-Day Postoperative Period Following Hospitalization for Orthopaedic Trauma**

Jessica Hooper, MD, New York, NY  
Nina Fisher, BS, New York, NY  
Sanjit R. Konda, MD, New York, NY  
Philipp Leucht, MD, New York City, NY  
Robert S. Bess, MD, Castle Rock, CO  
Kenneth A. Egol, MD, New York, NY

This study identifies an over-prescribing of opioid pain medications in the orthopaedic trauma population compared to other orthopaedic cohorts.

**Discussion**

**12:06 PM**

**PAPER 088**

**What is Too Swollen? Correlation of Soft Tissue Swelling and Timing to Surgery with Wound Complications for Operatively-Treated Lower Extremity Fractures**

Matthew D. Riedel, MD, Boston, MA  
Amber Parker, BSN, Roxbury, MA  
Jorge Briceno, MD, Santiago, Chile  
Steven Staffa, Boston, MA  
Christopher Miller, MD, Dover, MA  
Jim Wu, MD, Boston, MA  
David Zurakowski, PhD, Boston, MA  
John Y. Kwon, MD, Boston, MA

This study objectifies soft tissue swelling in lower extremity fractures, analyzes timing from injury to surgery, and patient-specific risk factors to create a wound complication risk algorithm.

**12:12 PM**

**PAPER 089**

**Does an Implant Usage Report Card Impact Orthopaedic Trauma Implant Stewardship?**

John Morellato, MBBS, Columbia, MD  
Mitchell Baker, BS, Baltimore, MD  
Nathan N. O’Hara, Baltimore, MD  
Kanu M. Okike, MD, Honolulu, HI  
Theodore T. Manson, MD, Bel Air, MD  
Gerard Slobogean, MD, MPH, Baltimore, MD  
Robert V. O’Toole, MD, Lutherville, MD  
Marcus F. Sciadini, MD, Baltimore, MD  
Andrew N. Pollak, MD, Baltimore, MD

Our findings suggest that surgeon implant usage can be influenced by providing regular feedback to surgeons on their implant usage and the relative cost of those implants.

**12:18 PM**

**PAPER 090**

**Intraoperative Tranexamic Acid and Preoperative Discontinuation of Prophylactic Anticoagulation, Combined, Decrease Operative Time, and Need for Blood Product Transfusion**

Wayne Cohen-Levy, BA, MD, Miami, FL  
Augustus Rush, MD, Miami, FL  
Joshua P. Goldstein, Miami, FL  
Jonathan I. Sheu, BS, Miami, FL  
Stephen M. Quinnan, MD, Miami, FL

Holding prophylactic anti-coagulation prior to surgery and administering intraoperative TXA decreased operative times and reduced the need for blood product transfusions.

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**12:24 PM**

**PAPER 876**

**When is an Orthopaedic Intern Ready to Take Call?**

Derek Smith, MD, Portland, OR  
Trevor Barronian, MD, Portland, OR  
David Jenkins, BA, Portland, OR  
Andrea Herzka, MD, Portland, OR  
Jacqueline M. Brady, MD, Portland, OR  
Darin M. Friess, MD, Portland, OR

The OISA will help orthopaedic training programs verify the clinical proficiencies required for independent call duties with indirect supervision.

**Discussion**

**PAPER PRESENTATIONS 091-105**

**10:30 AM - 12:30 PM**

**Palazzo Ballroom J**

**Adult Reconstruction Knee II (091-105): Revision TKA**

Moderators: George F. Chimento, MD, Metairie, LA and Orry Erez, MD, New York, NY

**10:30 AM**

**PAPER 091**

**Why are Contemporary Revision Total Knee Arthroplasties Failing?**

Ashton Goldman, MD, Rochester, MN  
Daniel J. Berry, MD, Rochester, MN  
Matthew P. Abdel, MD, Rochester, MN

In over 1,800 contemporary aseptic revision TKAs, we found a failure rate of approximately 2% per year, with aseptic loosening and infection being the most common causes for subsequent re-revision TKA.

**10:36 AM**

**PAPER 092**

**How Much Do Revision Total Knee Arthroplasty Knee Society Scores Improve Compared to Primary Total Knee Arthroplasty at Two-Year Follow Up: A Retrospective Chart Review**

Donald L. Pomeroy, MD, Louisville, KY  
Jessica S. Olson, BS, Louisville, KY  
Janene A. Empson, RN, ONC, Louisville, KY

Patients in both groups showed a significant improvement from their preoperative KS scores to their two-year postoperative KS scores, although greater gains were reached in the primary TKA group.

**10:42 AM**

**PAPER 093**

**Long-Term Results After Total Knee Arthroplasty with 144 Distal Femoral Replacements**

Cody Wyles, MD, Rochester, MN  
Meagan E. Tibbo, MD, Rochester, MN  
Kristin Mara, MS, Rochester, MN  
Brandon J. Yuan, MD, Rochester, MN  
Robert T. Trousdale, MD, Rochester, MN  
Matthew P. Abdel, MD, Rochester, MN

Distal femoral replacement TKA represents a final reconstructive option that yields clinical improvement in most patients; however, reoperation and revision rates are high at 10 years.

**Discussion**
10:54 AM  PAPER 094
Revisiting the Role of Isolated Polyethylene Exchange in Total Knee Arthroplasty
Ian Duensing, MD, Salt Lake City, UT
Christopher E. Pelt, MD, Salt Lake City, UT
Mike Anderson, MSc, Salt Lake City, UT
Jill Erickson, PA, Salt Lake City, UT
Jeremy Gililland, MD, Salt Lake City, UT
Christopher L. Peters, MD, Salt Lake City, UT
Our data suggests that when done for carefully selected indications, isolated polyethylene exchange may be an acceptable procedure, particularly in aseptic TKA revisions.

11:00 AM  PAPER 095
Ignore the Patella in Revision Total Knee Surgery
David F. Dalury, MD, Baltimore, MD
Danielle M. Chapman, Towson, MD
At mid-term follow up, no subsequent patella failures were found in a group of RTKR patients where the patella was not revised.

11:06 AM  PAPER 096
Severity of Chronic Kidney Disease as an Independent Risk Factor for Increased 30-Day Complication Rates in Revision Total Knee Arthroplasty: A Propensity-Matched Analysis
Danny Lee, BS, Washington, DC
Ryan Lee, BS, MBA, Washington, DC
David Strum, ACNP-BC, ATC, Washington, DC
Jessica H. Heyer, MD, Washington, DC
Taylor Swansen, MD, Washington, DC
Rajeev Pandarinath, MD, Falls Church, VA
Moderate to severe chronic kidney disease independently increases the risk for renal failure, transfusions, return to the operating room, extended length of stay, and death in patients following rTKA.

11:18 AM  PAPER 097
◆ A Multi-Center Randomized Clinical Trial of Tranexamic Acid in Revision Total Knee Arthroplasty: Does the Dosage Regimen Matter?
Yale Fillingham, MD, Hanover, NH
Brian Darrith, Chicago, IL
Matthew P. Abdel, MD, Rochester, MN
Arthur L. Malkani, MD, Louisville, KY
Ran Schwarzkopf, MD, New York, NY
Douglas E. Padgett, MD, New York, NY
Robert T. Trousdale, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Despite the higher risk of blood loss in revision TKA, all TXA regimens tested in the RCT had equivalent blood-sparing properties.

11:24 AM  PAPER 098
Lymphocyte Transformation Testing in Painful Total Knee Arthroplasty: Little Relationship to Pathology and Revision Outcomes
Steven Yang, MD, Redondo Beach, CA
Matthew Dipane, BA, Los Angeles, CA
Conrad Lu, MD, Los Angeles, CA
Thomas P. Schmalzlried, MD, Los Angeles, CA
Edward J. McPherson, MD, Los Angeles, CA
Positive lymphocyte transformation test (LTT) in the setting of a painful, stiff TKA does not correlate with histopathology obtained at the time of revision surgery.

11:30 AM  PAPER 099
Does Neutral Mechanical Alignment Improve the Durability of Revision Total Knee Arthroplasty?
Matthew P. Abdel, MD, Rochester, MN
Nicolas Reina, MD, PhD, Toulouse, France
Christopher G. Salib, BA, MS, Nashville, TN
Robert T. Trousdale, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
In a large series of 411 revision TKAs, achieving a postoperative neutral mechanical alignment of 0°±3° did not demonstrably improve implant survivorship at 10 years.

11:42 AM  PAPER 100
Serum Ions following Revision Knee Arthroplasty using Metal-on-Metal Hinges
Antonio Klisan, MD, Marburg, Germany
Karl-Friedrich Schuettler, MD, Marburg, Germany
Turgay Efe, MD, Marburg, Germany
Philipp Otto Georg Dworschak, MD, Marburg, Germany
Sven E. Putnis, FRCS (Ortho), Sydney, Australia
Susanne Fuchs-Winkelmann, MD, Marburg, Germany
Thomas J. Heyse, MD, Frankfurt, Germany
Elevated serum ion levels are a frequent finding following hinged TKA that may deserve monitoring. In none of the cases did serum levels lead to clinical consequences.

11:48 AM  PAPER 101
Revision for Limited Range of Motion Following Primary Total Knee Arthroplasty – Analysis of 106 Cases
Brandon R. Bukowski, MD, Rochester, MN
Cody Wyles, MD, Rochester, MN
Adam Hart, MD, Montreal, QC, Canada
Megan Obyrne, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Revision TKA for limited range of motion resulted in modest gains for most patients. Prerevision limited flexion and postrevision manipulation under anesthesia were poor prognostic indicators.
Axial Implant Rotation

The primary purpose of this study was to evaluate the functional outcomes of patients undergoing revision surgery for suboptimal axial implant rotation. We hypothesize 1) that patients with suboptimal component rotation present with either stiffness or instability and 2) after revision TKA their range of motion and clinical outcome scores improve.

Improved Range of Motion and Patient Reported Outcome Scores with Fixed-Bearing Revision Total Knee Arthroplasty for Suboptimal Axial Implant Rotation

Derek F. Amanullah, MD, Redwood City, CA
William G. Lundergan, MD, Walnut Creek, CA
Wendy W. Wong, MD, Danville, CA
Paul Lichstein, MD, Boston, MA
Stuart B. Goodman, MD, PhD, Redwood City, CA
William J. Maloney, MD, Redwood City, CA
James I. Huddleston III, MD, Redwood City, CA

The primary purpose of this study was to evaluate the functional outcomes of patients undergoing revision surgery for suboptimal axial implant rotation. We hypothesize 1) that patients with suboptimal component rotation present with either stiffness or instability and 2) after revision TKA their range of motion and clinical outcome scores improve.

Varus-Valgus Constraint in 420 Revision Total Knee Arthroplasties: A Notably Low Rerevision Rate

Afton Limberg, Rochester, MN
Meagan E. Tibbo, MD, Rochester, MN
Kevin I. Perry, MD, Rochester, MN
Mark W. Fagnano, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

With routine use of cemented stems and targeted use of metaphyseal cones, this fixed bearing VVC design in revision TKA had a notably low incidence of rerevision for loosening or instability at five years.

Preoperative steroid use is not an independent risk factor for wound infection rates, but is associated with increased risks of septic shock and prolonged hospital LOS.

This study highlights the excessive waste of disposable products during hand surgery cases. This study allows us to quantify cost and identify ways of improvement.

Carpal tunnel release surgery performed under local alone resulted in significantly less surgical cost ($1,400 on average) and post-surgical time than those performed with sedation.

Clinical Outcomes of Combined Surgical Treatment of Medial Epicondylitis and Cubital Tunnel Syndrome

Megan Mooney, MD, Toledo, OH
Kyle Andrews, MD, Toledo, OH
Andrea Rowland, BS, Holland, OH
Abdulazim Mustapha, MD, Sylvania, OH
Margaret K. Jain, MD, Silverdale, WA
Martin C. Skie, MD, Toledo, OH

Medial epicondylar debridement when combined with ulnar nerve in situ decompression is associated with poor clinical outcomes in comparison to concomitant ulnar nerve transposition.

No difference in pain experience, pill consumption, refills, or satisfaction was found when either opioid or non-opioids were prescribed after hand surgery performed under local only.
11:00 AM  PAPER 110
The Effect of Preoperative Counseling on Postoperative Pain Experience after Outpatient Hand Surgery: A Prospective Randomized Trial
Asif M. Ilyas, MD, Wayne, PA
Talia Chapman, MD, Philadelphia, PA
Kristin Sandrowski, MD, Philadelphia, PA
Sommer Hammoud, MD, Philadelphia, PA

More opioids were prescribed than needed, on an average of 3:1. Patients not counseled and those chronic opioid users were less satisfied with the opioids prescribed and their overall pain experience.

11:06 AM  PAPER 111
Prospective Evaluation of Sleep Improvement Following Cubital Tunnel Decompression Surgery
Joseph Said, MD, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Asif M. Ilyas, MD, Wayne, PA

CuTS can result in sleep disturbances qualifying as insomnia. CuTS decompression surgery, irrespective of surgical type and preoperative severity, resulted in normalizing of sleep quality.

Discussion

11:18 AM  PAPER 112
Prospective Evaluation of Opioid Consumption Following Thumb Basal Joint Arthroplasty
Lili Schindelar, MD, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Asif M. Ilyas, MD, Wayne, PA

Patients are being over prescribed after thumb CMC arthroplasty. No more than 20 opioid pills are needed postoperatively, irrespective of surgical technique.

11:24 AM  PAPER 113
Comparison of Opioid Use by Choice of Anesthesia in Hand Surgery
Gopal R. Lalchandani, MD, San Francisco, CA
Ryan Halvorson, BS, San Francisco, CA
Paymon Rahgozar, MD, San Francisco, CA
Igor Immerman, MD, San Francisco, CA

This abstract presents a multivariate analysis of anesthesia choice on perioperative opioid prescribing patterns in hand surgery using an administrative claims database.

11:30 AM  PAPER 114
Wide Awake Approach for Open Carpal and Cubital Tunnel Release Surgery: Is It Available?
Ji Kang Park, Cheongju, Republic of Korea
Sangwoo Kang, Cheongju, Republic of Korea
Seokhyun Hong, Cheongju, Republic of Korea

Wide awake approach for open carpal and cubital tunnel release surgery offers better comfort for patients.

Discussion

11:42 AM  PAPER 115
Does Revision Surgery Signify Disease Persistence or Recurrence? An 18-Year Longitudinal Cohort Study of 855,832 Carpal Tunnel Release Surgeries in England
Jennifer Lane, MD, London, United Kingdom
Richard S. Craig, MBBS, BSc, Oxford, United Kingdom
Jane Green, MD, PhD, Oxford, United Kingdom
Daniel Prieto-Alhambra, MD, Oxford, United Kingdom
Dominic Furniss, Oxford, United Kingdom

This large cohort study describes a 3.4% CTD revision rate over 19 years, median time to revision of 351 days. Diabetes, increasing age, and male gender were associated with increased revision risk.

11:48 AM  PAPER 116
Prospective Evaluation of the Incidence and Persistence of Gestational Carpal Tunnel Syndrome
Ariana N. Mora, BA, Boston, MA
Philip E. Blazar, MD, Boston, MA
Brett A. Teplitz, BA, Dix Hills, NY
Jenna Rogers, Louisville, KY
Brandon E. Earp, MD, Boston, MA

Prospective study evaluating incidence and persistence of gestational carpal tunnel syndrome from the third trimester to one year post-partum in 420 women.

11:54 AM  PAPER 117
Multi-State Comparison of Cost, Trends, and Complications in Open Versus Endoscopic Carpal Tunnel Release
Emilie R. Williamson, MD, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Eitan Melamed, MD, New York, NY

This large database study found no significant difference between open and endoscopic carpal tunnel release except in total charges, with ECTR being significantly more costly by almost $2,000.

Discussion

12:06 PM  PAPER 118
Night Time Awakening Symptoms and Outcomes After Carpal Tunnel Release Surgery
Sarah Lander, MD, Rochester, NY
Alex Lander, BS, Narrowburg, NY
Warren C. Hammert, MD, Rochester, NY

Our study investigates outcomes and satisfaction following carpal tunnel surgery of patients with preoperative night time awakening symptoms compared to those without at six weeks and three months.
Tuesday Educational Programs

12:12 PM  PAPER 119
Outcomes of Endoscopic Carpal Tunnel Release Surgery with Home Guided Hand Therapy Versus No Hand Therapy: A Prospective Randomized Controlled Trial
Jake Schroeder, MD, Bethlehem, PA
Ajith Malige, MD, Bethlehem, PA
William E. Rodriguez, BS, Bethlehem, PA
Franzes A. Liongson, BA, Bethlehem, PA
Kristofer S. Matullo, MD, Ambler, PA
This prospective, randomized controlled study shows no significant difference in multiple outcomes between patients performing home hand therapy and no therapy following endoscopic CTR surgery.

12:18 PM  PAPER 120
Postoperative Evaluation by Smartphone After Carpal Tunnel Release: A Pilot Study
Josef N. Tufte, MD, Iowa City, IA
Christopher Anthony, MD, Iowa City, IA
Philip M. Polgreen, MD, Iowa City, IA
Joseph A. Buckwalter, MD, Iowa City, IA
Lindsey Caldwell, MD, Iowa City, IA
Timothy P Fowler, MD, North Liberty, IA
Jessica M. Hanley, MD, Iowa City, IA
Spencer B. Dowdle, MD, Iowa City, IA
Ericka A. Lawler, MD, Iowa City, IA
This study explores a novel smartphone-based web application for postoperative care following carpal tunnel release.

10:30 AM - 12:30 PM  Room 4303
Musculoskeletal Oncology I (121-135): Musculoskeletal Tumors I
Moderators: Francis Y. Lee, MD, PhD, New Haven, CT and Christian M. Ogilvie, MD, Minneapolis, MN

10:30 AM  PAPER 121
Glycogen Synthase Kinase-3β is a New Therapeutic Target in Soft Tissue Sarcoma: A Basic Research
Kensaku Abe, MD, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Ishikawa, Japan
Takahiro Domoto, Kanazawa, Ishikawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kentaro Igarashi, MD, PhD, Kanazawa, Japan
Takashi Higuchi, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hirotaka Yonezawa, MD, Kanazawa, Japan
Yoshihiro Araki, MD, Kanazawa, Japan
Toshinari Minamoto, MD, PhD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Department of Orthopaedic Surgery, Graduate School of Medical Science, Kanazawa University
This study demonstrated that deregulated activity of GSK-3β in soft tissue sarcoma is responsible for tumor proliferation and invasion. Targeting tumoral GSK-3β is a promising therapeutic strategy.

10:36 AM  PAPER 122
Effect of Sarcoma Cell Heterogeneity on Tumor Behavior
Alexandra Paul, BS, Durham, NC
Jackie J. Tang, Durham, NC
Benjamin Alman, MD, Durham, NC
Sarcomas exhibit significant cellular heterogeneity. We show here that these unique cell populations can effect the behavior of one another, and influence tumor growth in vivo.

10:42 AM  PAPER 123
Nab-Paclitaxel Combined with Gemcitabine Inhibits Undifferentiated Sarcoma Growth in the Patient-Derived Orthotopic Xenograft (PDOX) Model: Promising a Novel Therapeutic Strategy for Sarcoma
Takashi Higuchi, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Hiroaki Kimura, MD, PhD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kentaro Igarashi, MD, Ishikawa, Japan
Robert M. Hoffman, PhD, San Diego, CA
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
We evaluated the efficacy of gemcitabine combined with nanoparticle albumin-bound paclitaxel, the first nanotechnology-based drug, with undifferentiated sarcoma patient-derived orthotopic xenografts.
**TUESDAY EDUCATIONAL PROGRAMS**

**10:54 AM**
**PAPER 124**
Primary Versus Staged Soft Tissue Reconstruction Have Similar Wound and Oncologic Outcomes After Soft Tissue Sarcoma Excision

Joshua Lawrenz, MD, Cleveland Heights, OH
Danielle C. Marshall, BA, New York, NY
Jaiben George, MBBS, Cleveland, OH
Aparna Vijayasekaran, MBBS, Cleveland, OH
Jaymeson Gordon, Willowick, OH
Lukas M. Nystrom, MD, Cleveland, OH
Graham Schwarz, MD, Cleveland, OH
Nathan W. Mesko, MD, Cleveland, OH

There was similar wound complication rates and oncologic outcomes when comparing patients who underwent primary versus staged soft tissue reconstruction after soft tissue sarcoma excision.

**11:00 AM**
**PAPER 125**
The Diagnostic Performance of PET/CT in Patients with Skeletal Metastases of Unknown Primary

Joshua Lawrenz, MD, Cleveland Heights, OH
Jaymeson Gordon, Willowick, OH
Collin Haben, BS, Lyndhurst, OH
Jaiben George, MBBS, Cleveland, OH
Hakan Ilaslan, MD, Pepper Pike, OH
Brian P. Rubin, MD, Cleveland, OH
Nathan W. Mesko, MD, Cleveland, OH
Lukas M. Nystrom, MD, Cleveland, OH

PET/CT may not provide a benefit for identification of the primary tumor in patients with a skeletal metastasis of unknown primary, though may have efficacy as a screening tool for metastatic burden.

**11:06 AM**
**PAPER 126**
Effect of Radiotherapy on MRI Measures of Tumor Invasiveness and Outcomes in Patients with Soft Tissue Sarcoma Treated with Preoperative Radiotherapy and Surgical Excision

Dustin C. Buller, BS, Dallas, TX
Courtney S. Toombs, MD, New York, NY
Francis Y. Lee, MD, PhD, New Haven, CT
Gary E. Friedlaender, MD, New Haven, CT
Dieter Lindskog, MD, New Haven, CT

A retrospective study of measures of tumor invasiveness on pre- and post- radiation MRIs and their correlation with outcomes in a cohort with soft tissue sarcoma treated with pre-op XRT and excision.

**11:18 AM**
**PAPER 127**
A Novel Gene Signature for Prediction of Breast Cancer Skeletal Metastasis

Izuchukwu K. Ibe, MD, New Haven, CT
Minh Nam Nguyen, New Haven, CT
Jungho Back, PhD, New Haven
Ronan Taity, BS, Bayside, NY
Michael J. Flores, BS, New Haven, CT
Joy Lee, BS, New Haven, CT
Yoseph Kim, Shelton, CT
Daniel R. Lind, San Juan Capistrano, CA
Francis Y. Lee, MD, PhD, New Haven, CT

Metastatic gene signature is a useful tool to predict the bone metastatic outcome, suggesting the general utility of this classifier in an era of precision medicine.

**11:24 AM**
**PAPER 128**
Breaking the Osteolytic Breast Cancer Induced Inflammatory Vicious Cycle by Targeting of ERK1/2

Izuchukwu K. Ibe, MD, New Haven, CT
Jungho Back, PhD, New Haven, CT
Minh Nam Nguyen, New Haven, CT
Ronan Taity, BS, Bayside, NY
Michael J. Flores, BS, New Haven, CT
Joy Lee, BS, New Haven, CT
Yoseph Kim, Shelton, CT
Daniel R. Lind, San Juan Capistrano, CA
Francis Y. Lee, MD, PhD, New Haven, CT

Target ERK1/2 provides the therapeutic advantages of reducing bone inflammation, protecting bone, and enhancing breast cancer cell death.

**11:30 AM**
**PAPER 129**
Development of a Convolutional Neural Network for Predicting Fracture Risk in Metastatic Bone Disease

Anthony Bozzo, MD, Dundas, ON, Canada
Kiret Dhindsa, PhD, Hamilton, ON, Canada
James P. Reilly, PhD, Hamilton, ON, Canada
Michelle A. Ghert, MD, FRCSC, Oakville, ON, Canada

Our novel machine learning based convolutional neural network is able to accurately determine fracture risk in metastatic bone disease of the proximal femur.

**11:42 AM**
**PAPER 130**
Raman Biomarkers Predict Cyclic Fatigue Life of Human Allograft Cortical Bone

Jerry Y. Du, MD, Cleveland, OH
Christopher Flanagan, MD, Cleveland, OH
Jay Bensusan, MS, Cleveland, OH
Konrad D. Knusel, BA, MSc, Cleveland Heights, OH
Ozan Akkus, Cleveland, OH
Clare M. Rimnac, PhD, Cleveland, OH

Raman spectroscopy biomarkers for collagen, mineral, and water components of bone are able to predict number of cycles to failure of human allograft cortical bone.
An Evaluation of PROMIS Health Domains in Sarcoma Patients Compared to the United States Population

Benjamin Wilke, MD, Jacksonville, FL
Anna R. Cooper, MD, Oak Park, IL
Mark T. Scarborough, MD, Gainesville, FL
C. P. Gibbs, MD, Gainesville, FL
Andre R. Spiguel, MD, Gainesville, FL

Using the PROMIS tool, lower rates of depression were observed in sarcoma patients when compared to the U.S. general population.

Survey of Patients with Ollier Disease and Maffucci Syndrome Using Facebook Compared to Review of Clinical Literature

Jad El Abiad, BS, Baltimore, MD
Nara Sobreira, Baltimore, MD
Sarah Robbins, BA, BS, Baltimore, MD
Carol D. Morris, MD, MS, Baltimore, MD

We compared the natural history of patients with Ollier disease and Maffucci syndrome obtained from results of a Facebook survey to the published literature.

5-Aminolevulinic Acid Photodynamic Therapy for Myxofibrosarcoma and Chordoma: In Vitro Cellular Destruction Visualized Via Time-Lapse Confocal Microscopy

Shachar Kenan, MD, New Hyde Park, NY
Ryan A. Nixon, MD, Brooklyn, NY
Haixiang Liang, MD, MS, Manhasset, NY
Howard J. Goodman, MD, Englewood, NJ
Daniel A. Grande, PhD, Manhasset, NY
Adam S. Levin, MD, Baltimore, MD

5-ALA PDT was used in vitro for targeted destruction of myxofibrosarcoma and chordoma tumors visualized via time-lapse confocal microscopy.

A Phase 1 Trial on the Use of Photodynamic Therapy in Vertebral Metastases

Zakariya Ali, Toronto, ON, Canada
Carl Fisher, PhD, Toronto, ON, Canada
Arjun Sahgal, MD, Toronto, ON, Canada
Elizabeth David, MD, Toronto, ON, Canada
Edward Chow, Toronto, ON, Canada
Cari Whyne, PhD, Toronto, ON, Canada
Shane Burch, FRCSC, MD, San Anselmo, CA
Brian C. Wilson, PhD, Toronto, ON, Canada
Albert Yee, MD, Toronto, ON, Canada

This first-in-human study evaluates the safety of photodynamic therapy when applied in conjunction with vertebroplasty or balloon kyphoplasty in the treatment of vertebral metastases.

Risk Factors of Instrumentation Failure after Total En Bloc Spondylectomy of the Thoracolumbar Junction and Lumbar Spine

Takaki Shimizu, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Katsuhiro Yoshioka, MD, Kanazawa, Japan
Kazuya Shinmura, MD, Ishikawa, Japan
Noriaki Yokogawa, MD, Kanazawa, Japan
Norihiro Oku, MD, Kanazawa, Japan
Ryo Kitagawa, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

Department of Orthopaedic Surgery, Graduate School of Medical Science, Kanazawa University

Mutilevel TES and higher BMI were the risk factors for instrumentation failure after TES below the thoracolumbar junction. More robust spinal reconstruction should be considered in high-risk cases.

Leadership at Every Level: Principles and Practice

Moderator: Aaron G. Rosenberg, MD, FACS, Chicago, IL
Daniel J. Berry, MD, Rochester, MN
Thomas K. Fehring, MD, Charlotte, NC
Joshua J. Jacobs, MD, Chicago, IL

This course is designed to help you implement your leadership skills at the local, regional, and national levels. Specifics of successful leadership are discussed, understanding that leaders are developed not born. Team building, mentoring, and inertia avoidance are discussed along with time management and strategies to maintain balance.
191 - RESIDENT'S COURSE

12:30 PM - 5:00 PM

Practice Management Course for Residents and Fellows-in-Training

Moderators: Laura Phieffer, MD, Columbus, OH and Marc R. Safran, MD, Redwood City, CA
Jonathan D. Barlow, MD, MS, Rochester, MN
Jonathan P. Braman, MD, Minneapolis, MN
Kathleen L. DeBruhl, JD, New Orleans, LA
Steven L. Frick, MD, Stanford, CA
Douglas W. Lundy, MD, MBA, Atlanta, GA
Louis F. McIntyre, MD, Sleepy Hollow, NY
Evette D. Thompson, Rosemont, IL
Anthony C. Williams, Tempe, AZ

Residents, join us for this specially developed educational event tailored just for you! In addition to presenting the core competencies required for completion of an orthopaedic residency program, you also learn how to prep for a fellowship, choose your first job, and navigate the legal/medical world of orthopaedics. CME credit is not available for this session.

CAREER DEVELOPMENT

1:30 PM - 2:30 PM

Managing Residents in 2019

Moderator: Kenneth A. Egol, MD, New York, NY
R. Dale Blasier, MD, Little Rock, AR
George S. Dyer, MD, Boston, MA

This course provides the learner with an assessment of barriers to the implementation of modern teaching strategies in orthopaedic residencies and discusses the historical and current models for training in the United States. Presenters discuss metrics for evaluation and present methods to improve resident assessment. This course also helps you design a plan as part of the educational process to foster success and target areas to deal with underperformance on a case-by-case basis. One size does not fit all!

SYMPOSIUM

1:30 PM - 3:30 PM

Palazzo Ballroom E

Decision Making for Complex Shoulder Problems: A Case-Based Approach

Moderator: Rachel M. Frank, MD, Boulder, CO

The goal of this symposium is to provide a comprehensive overview of the current understanding of complex shoulder pathology, including surgical decision-making, techniques, and outcomes, with an evidence-based approach focusing on the cost-effectiveness and value of all available approaches.

I. Proximal Humerus Fractures – 45 Year Old with a Head-Split – What should I Do?
   Peter N. Chalmers, MD, Salt Lake City, UT

II. Arthritis: The Glenoid Fractured During TSA Prep – Now What?
   Michael T. Freehill, MD, Ann Arbor, MI

III. Instability with Cuff Tear: Fix Labrum, Fix the Cuff, or Fix Both?
    William N. Levine, MD, New York, NY

IV. Instability: The Failed Laterjet – Now What?

V. Rotator Cuff: 45 years Old and 2 Failed Cuff Repairs – Now What?
   Felix H. Savoie, MD, New Orleans, LA

VI. Arthritis: the B3 Glenoid – What Should I Do?
   Gilles Walch, MD, Lyon, France

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
INSTRUCTIONAL COURSE LECTURES

1:30 PM - 3:30 PM

141 Understanding Hip Dysplasia: Evolving Disease Concepts and Treatment Innovations
   Moderator: John C. Clohisy, MD, St. Louis, MO
   Paul E. Beaule, MD, Ottawa, ON, Canada
   Ashshe Bedi, MD, Ann Arbor, MI
   Christopher L. Peters, MD, Salt Lake City, UT
   Room
   Improved understanding of hip pathomorphology and instability have led to major improvements in diagnosis and treatment. This course highlights recent advancements and innovations treating developmental dysplasia of the hip (DDH).

142 Partial Knee Arthroplasty: The State of the Art
   Moderator: Tad L. Gerlinger, MD, Winnetka, IL
   Keith R. Berend, MD, New Albany, OH
   Richard A. Berger, MD, Chicago, IL
   Jess H. Lonner, MD, Bryn Mawr, PA
   Room
   The state of the art in partial knee arthroplasty, including patient selection, surgical techniques, and implant selection are discussed, highlighted by surgical technique videos.

143 Peroneal Tendon Pathology: Cutting-Edge Concepts in Diagnosis and Management
   Moderator: Christopher W. DiGiovanni, MD, Waltham, MA
   James Calder, MD, London, United Kingdom
   Christopher P. Chiodo, MD, Boston, MA
   John G. Kennedy, MD, New York, NY
   Room
   This ICL highlights all cutting-edge diagnostic and management strategies for the spectrum of acute and chronic peroneal pathologies, helping direct best practice treatment.

144 Thromboembolism Prophylaxis for Orthopaedic Surgeons: Update 2019
   Moderator: Paul F. Lachiewicz, MD, Chapel Hill, NC
   Mrudula B. Glassberg, Jersey City, NJ
   Joshua J. Jacobs, MD, Chicago, IL
   Douglas E. Padgett, MD, New York, NY
   Room
   This is a comprehensive review of all aspects of pharmacologic and non-pharmacologic venous thromboembolism (VTE) prophylaxis for the practicing orthopaedic surgeon.

145 Reevaluation of the Scaphoid Fracture: What is the Current Best Evidence?
   Moderator: Jesse B. Jupiter, MD, Boston, MA
   Geert Buijze, MD, PhD, Montpellier, France
   A. Lee Osterman, MD, Villanova, PA
   Scott W. Wolfe, MD, New York, NY
   Room
   This ICL explores the most recent best evidence for the assessment and management of the scaphoid fracture to include fracture assessment, treatment, and outcomes.

146 Managing Complications and Failures in Pediatric Sports Medicine
   Moderator: Nirav K. Pandya, MD, Oakland, CA
   Jennifer Beck, MD, Los Angeles, CA
   Jonathan C. Riboh, MD, Durham, NC
   Samuel C. Willimon, MD, Atlanta, GA
   Room
   Principles of revision surgery in the high demand pediatric athlete are essential for the sports medicine physician.

147 Quality Measure: What You Should Know about Your Subspecialty
   Moderator: Robin N. Kamal, MD, Redwood City, CA
   Kevin J. Bozic, MD, MBA, Austin, TX
   Serena S. Hu, MD, Redwood City, CA
   William T. Obremskey, MD, MPH, Nashville, TN
   Room
   Quality measures judge quality of care provided by orthopaedic surgeons but often do not address meaningful areas of care or ignore impactful areas of care.

148 The Changing Face of Shoulder Arthroplasty: An Outpatient Procedure Whose Time Has Come
   Moderator: Jonathan P. Braman, MD, Minneapolis, MN
   Alicia K. Harrison, MD, Minneapolis, MN
   Daniel Shumate, Germantown, TN
   Thomas (Quin) W. Throckmorton, MD, Germantown, TN
   Room
   With an increasing frequency, many hip and knee replacements lend themselves to an outpatient location. Shoulder arthroplasty, because ability to ambulate postoperatively is unaffected, is increasingly being studied as a procedure amenable to the ambulatory setting. This course focuses on pros and cons of outpatient total shoulder replacement, provides guidelines for patient selection, and presents experiences in three different settings.

149 Evaluation and Surgical Treatment of Knee Osteochondritis Dissecans and Adolescent Cartilage Injuries
   Moderator: Benton E. Heyworth, MD, Boston, MA
   Henry B. Ellis, MD, Dallas, TX
   Daniel Green, MD, New York, NY
   Jeffrey J. Nepple, MD, St. Louis, MO
   Room
   A highly interactive and comprehensive review of the full spectrum of presentations that arise in adolescent knee cartilage pathology, from trauma to OCD and beyond.

150 Surgical Considerations in Revision Anterior Cruciate Ligament Reconstruction
   Moderator: Michael J. Alaia, MD, New York, NY
   Robert A. Arciero, MD, Farmington, CT
   Gregory C. Fanelli, MD, Danville, PA
   Volkmar Musahl, MD, Pittsburgh, PA
   Room
   This course reviews practical information and technical tips for surgeons performing revision ACL reconstructions. Case presentations highlight decision-making skills and solutions to common challenging problems.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
INSTRUCTIONAL COURSE LECTURE

1:30 PM - 4:30 PM

192 Ten Hot ICD-10 and CPT Coding Issues Facing Practicing Orthopaedic Surgeons
Moderator: Margaret Maley, BSN, MS, Friendswood, TX

At the conclusion of this course, participants are able to demonstrate how to use technology to find the correct ICD-10 diagnosis in real time; identify the category of any injury diagnosis in ICD10-CM; appropriately document fracture treatment to support ICD-10 coding; use the modifier 58 for staged procedures correctly; define the common use of the modifier 59 in hip, knee, and shoulder surgery; understand and use Modifier 22 for unusual service with confidence.

PAPER PRESENTATIONS 136-150

1:30 PM - 3:30 PM
Room 4401

Adult Reconstruction Hip I (136-150): Primary THA
Moderators: Paul J. Duwelius, MD, Portland, OR and Arthur L. Malkani, MD, Louisville, KY

1:30 PM PAPER 136
IV vs. Oral Acetaminophen as a Component of Multimodal Analgesia After Total Hip Arthroplasty: A Randomized, Double Blinded, Controlled Trial
Geoffrey H. Westrich, MD, New York, NY
George Birch, BS, New York, NY
Ahava Muskat, New York, NY
Douglas E. Padgett, MD, New York, NY
Enrique Goytizolo, New York, NY
Mathias P. Bostrom, MD, New York, NY
David J. Mayman, MD, New York, NY
Yi Lin, New York, NY
Jacques YaDeau, MD, New York, NY

A double-blinded, randomized, controlled study compared THA patients who were administered oral acetaminophen postoperatively to THA patients who were administered IV acetaminophen postoperatively.

1:36 PM PAPER 137
Have We Actually Reduced Surgical Site Infection Rates in Primary Total Hip Arthroplasty?
Nipun Sudhi, BA, Cleveland, OH
Hiba Anis, MD, Cleveland, OH
Luke Garbarino, MD, Bellerose, NY
Peter A. Gold, MD, Brooklyn, NY
Assem Sultan, MD, Cleveland, OH
Steven M. Kurtz, PhD, Philadelphia, PA
Carlos A. Higuera Rueda, MD, Weston, FL
Matthew S. Hepinstall, MD, New York, NY
Michael A. Mont, MD, New York, NY

The findings from this study suggest that the evolving standards of care have brought about significant improvements in wound care and infection prevention following THA over time.
Should the Centers for Medicare and Medicaid Services Remove Total Hip Arthroplasty from the Inpatient Only List?

Max Greenky, MD, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA
Danielle Y. Ponzio, MD, Longport, NJ
William Wang, MD, Philadelphia, PA

Using multivariate analysis, we used the ACS-NSQIP database to evaluate the safety of outpatient THA in the Medicare population and identify the ideal patient to undergo outpatient THA.

Discussion

Characterizing Acetabular Component Orientation with Pelvic Motion During Total Hip Arthroplasty

Cameron Killen, MD, Maywood, IL
Michael Murphy, Downers Grove, IL
Steven Ralles, MD, Maywood, IL
Nicholas M. Brown, MD, Chicago, IL
Avinash G. Patwardhan, PhD, Maywood, IL
Karen Wu, MD, Maywood, IL

This study characterized the relationship between pelvic rotation along three anatomic axes and acetabular cup orientation using a custom jig and computer navigation with a cadaver and simulation.

Discussion

Eliminating Standard Hip Precautions Does Not Increase the Risk of Dislocation after Contemporary Posterior Approach Total Hip Arthroplasty

Peter K. Sculco, MD, New York, NY
Ugonna N. Ihekweazu, MD, Houston, TX
Kaitlin M. Carroll, BS, New York, NY
Seth A. Jerabek, MD, New York, NY
Edwin P. Su, MD, New York, NY
Mark P. Figgie, MD, New York, NY
Friedrich Boettner, MD, New York, NY
Thomas P. Sculco, MD, New York, NY
David J. Mayman, MD, New York, NY

The dislocation rate of 0.46% suggests that standard postoperative precautions in patients undergoing THA through the posterior approach without known risk factors for dislocation are unnecessary.

Preoperative Predictors of Not Achieving a Minimal Clinically Important Improvement in Pain and Function Following Total Hip Arthroplasty: Findings from a Prospective, International, Multicenter Study

Pakdee Rojanasopondist, BA, Cambridge, MA
Vincent Galea, BA, Boston, MA
James W. Connelly, BA, Boston, MA
Sean J. Matuszak, BA, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
Ola Rolfsen, MD, PhD, Molndal, Sweden
Henrik Malchau, MD, Cambridge, MA

This study identifies demographic and surgical factors predictive of not achieving a minimal clinically important improvement in pain or physical function at one year after total hip arthroplasty.

Discussion

Do Metal Artifact Reduction Sequence MRI Characteristics of Adverse Local Tissue Reactions in Head-Neck Taper Corrosion in Metal-on-Polyethylene Total Hip Arthroplasty Differ from Metal-on-Metal THA?

John Mahajan, MD, San Francisco, CA
Matthew Hall, MD, Boston, MA
Bryant Bonner, MD, Somerville, MA
Paul G. Arauz, PhD, Boston, MA
Yun Peng, PhD, Boston, MA
Young-Min Kwon, MD, PhD, Boston, MA

MARS MRI characteristics of adverse local tissue reactions differ by bearing type and modularity, with a significantly higher percentage of mixed and solid type pseudotumors in the taper corrosion MoP.

Does Adverse Local Tissue Reaction Mass Effect on Neurovascular Structures Explain Symptomaticity in Patients with Metal-on-Metal Hip Implants?

Sami Saku, MB, Helsinki, Finland
James W. Connelly, BA, Boston, MA
Vincent Galea, BA, Boston, MA
Rami Hadanat, MD, Helsinki, Finland
Orhun K. Muratoglu, PhD, Boston, MA
Henrik Malchau, MD, Cambridge, MA

In this MARS-MRI study we showed that a radiographically confirmed ALTR exerting a mass effect on neurovascular structures in the hip did not correlate with worse PROMs.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off-label use). For full information refer to page 17.
TUESDAY EDUCATIONAL PROGRAMS

2:30 PM PAPER 144
Are Supine Intraoperative and Standing Biplanar Postoperative Radiographic Measurements of Acetabular Cup Position the Same?
Ryan E. Harold, MD, Chicago, IL
Dimitri Delagrammaticas, MD, Chicago, IL
Tyler Keller, MD, Chicago, IL
Bennet Butler, MD, Chicago, IL
Michael D. Stover, MD, Chicago, IL
David W. Manning, MD, Chicago, IL

This study aims to compare 2D intraoperative radiographic measurements of acetabular component position with 3D postoperative measurements.

Discussion

2:42 PM PAPER 145
National Trends in Treatment of Femoral Neck Fracture from the American Joint Replacement Registry
Caryn Etkin, Rosemont, IL
Peter Shores, Rosemont, IL
Terence J. Goe, MD, Brentwood, CA
Bryan D. Springer, MD, Charlotte, NC
Kevin J. Bozic, MD, MBA, Austin, TX

This study used a national database (American Joint Replacement Registry) to evaluate trends in arthroplasty treatment of FNF over time, including: 1) procedure volumes; 2) arthroplasty type: hemiarthroplasty vs. THA; and 3) mode of femoral fixation.

2:48 PM PAPER 146
Occupational Noise Exposure in Hip and Knee Arthroplasty: Is Hearing Protection Required?
Sameer Saxena, MD, Bethesda, MD
Benjamin M. Wheatley, MD, Washington, DC
Daniel Christensen, MD, Bethesda, MD
Robert J. McGill, MD, Springfield, VA

Noise exposure during hip and knee arthroplasty presents a potential danger to the orthopaedic surgeon and assistants only if the volume of cases exceeds 20 per day.

2:54 PM PAPER 147
Regional Anesthesia following Total Hip Arthroplasty is Associated with Shorter Length of Stay and Fewer Complications Compared with General Anesthesia
Lauren Nowak, MSc, Toronto, ON, Canada
Emil H. Schemitsch, MD, London, ON, Canada

Patients who undergo THA with spinal anesthesia appear to have shorter hospital stays, and fewer 30-day complications compared to patients who undergo THA with general anesthesia.

Discussion

3:06 PM PAPER 148
A Geometric Model to Determine Patient-Specific Cup Anteversion Based on Pelvic Motion in Total Hip Arthroplasty
Edward Sutter, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Samuel S. Wellman, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

This study provides a quantitative relationship between pelvic motion and cup orientation and presents a tool that may identify patients at risk for instability and recommend intra-op cup anteversion.

3:12 PM PAPER 149
Slippery Slope: Increased Nicotine Level Associated with Greater Early Femoral Component Subsidence in Press-Fit, Primary Total Hip Arthroplasty
Brian T. Muffly, MD, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Stephen T. Duncan, MD, Lexington, KY

Increased nicotine level associated with greater early femoral component subsidence in press-fit, primary total hip arthroplasty.

3:18 PM PAPER 150
The Effect of Year of Surgery (Period Effect) on Mortality after Joint Replacement Surgery
Ian Harris, MBBS, FRACS, Daringhurst, Australia
Alesha Hatton, Adelaide, Australia
Peter L. Lewis, MB, Adelaide, Australia
Richard De Steiger, MD, Richmond, Australia
Stephen Graves, MD, Adelaide, Australia

The early (30-day) mortality after hip and knee arthroplasty significantly declined between 2003 and 2016, possibly due to improvements in intra- and perioperative care.

Discussion

1:30 PM - 3:30 PM
Palazzo Ballroom J
Adult Reconstruction Knee III (151-165): Opiates and Pain Management in TKA
Moderators: Douglas A. Dennis, MD, Denver, CO and Claudio Diaz, MD, Santiago, Chile

1:30 PM PAPER 151
Enhanced Recovery After Surgery Pathway for Total Knee and Hip Arthroplasty in a Medicare Population: Implications for a Transition to Ambulatory Surgery Centers
Alaine Van Horne, Grants Pass, OR
James R. Van Horne, MD, Grants Pass, OR

An opioid-minimizing enhanced recovery pathway for inpatient total knee arthroplasty yielded rates of complications, ER visits, readmissions, and opioid refill lower than commonly reported rates.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure

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Opioid refill after TKA and THA is common; however, larger initial prescriptions do not reduce the likelihood of refill. Smaller initial prescriptions may be part of preferred postoperative strategy.

**Increased Postoperative Dexamethasone and Gabapentin Application Reduces Opioid Consumption After Total Knee Replacement: A Retrospective Analysis**

Lukas Eckhard, MD, Mainz, Germany
Todd Jones, BA, Chestnut Hill, MA
Jamie E. Collins, MA, Boston, MA
Swastina Shrestha, MS, Brookline, MA
Wolfgang Fitz, MD, Boston, MA

High-dose postoperative administration of Dexamethasone and Gabapentin after TKA is associated with a 25% reduction in opioid consumption within the first 48h postop, compared to low-dose protocols.

**Should Cannabinoids Be Added to Multimodal Pain Regimens After Total Joint Arthroplasty?**

Thomas R. Hickernell, MD, New York, NY
Akshay Lakra, MBBS, MD, New York, NY
Ari Berg, New York, NY
Herbert J. Cooper, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY

A retrospective cohort study investigating the efficacy of adding cannabinoids to a postoperative multimodal pain regimen for total hip and knee arthroplasty.

**Large Opioid Prescriptions are Unnecessary after Total Joint Arthroplasty: A Randomized Controlled Trial**

Charles P. Hannon, MD, Chicago, IL
Tyler E. Calkins, BS, Morgantown, WV
Jefferson Li, BA, Chicago, IL
Chris Culvern, Chicago, IL
Brian Darrith, Chicago, IL
Denis Nam, MD, MSc, Chicago, IL
COL, (ret) Tad L. Gerlinger, MD, Winnetka, IL
Craig J. Della Valle, MD, Chicago, IL

Prescribing a smaller number of opioids at the time of surgery is associated with equivalent pain scores and opioid consumption yet a significant reduction in unused narcotics.

**Opioid Use after Hip and Knee Arthroplasty**

Praveen Vasantharao, Perth, Australia
Riaz Khan, FRACS, FRCS, Nedlands, Australia
Daniel P. Fick, MBBS, FRACS, Nedlands, Australia
Mark Lennon, Perth, Australia
Samantha Haebich, PT, Nedlands, Australia
Jess Micallef, Annandale, Australia

This paper provides insight into opioids use post arthroplasty in our cohort and helps counsel patients pre and postoperatively regarding opioid use.

**Perioperative Outpatient Opioid Prescription Use by Total Joint Arthroplasty Patients in an Urban Setting**

Thomas R. Hickernell, MD, New York, NY
Austin C. Kaidi, MSc, New York, NY
Akshay Lakra, MBBS, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Herbert J. Cooper, MD, New York, NY

A retrospective analysis of opioid pain medication prescribing practices in a busy academic, urban hip and knee arthroplasty practice using a statewide electronic prescription monitoring program.

**Effect of Adductor Canal Block on Acute Perioperative Pain and Function in Total Knee Arthroplasty**

Richard D. Rames, MD, St. Louis, MO
Toby N. Barrack, BA, St. Louis, MO
Ryan M. Nunley, MD, St. Louis, MO
Robert L. Barrack, MD, St. Louis, MO

Adductor canal blocks did not decrease postoperative narcotic medication utilization when combined with a modern multimodal pain regimen in the acute postoperative period.

**Predicting Continued Opioid Usage following Total Knee Arthroplasty using a Mandatory Statewide Database**

Alexander Rondon, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
William Wang, MD, Philadelphia, PA
Zachary Wilt, MD, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Pedro K. Beredjiklian, MD, Philadelphia, PA
William V. Arnold, MD, Meadowbrook, PA

This study identified risk factors and developed a risk calculator for the requirement of a second opioid prescription, and continued necrotic usage after six months.
Higher Incidence of Manipulation Under Anesthesia Following Total Knee Arthroplasty Associated with the Periarticular Infiltration of a Liposomal Bupivacaine Cocktail Compared to a Modified Ranawat Cocktail

Ian Duensing, MD, Salt Lake City, UT
Christopher L. Peters, MD, Salt Lake City, UT
Priscila Monteiro, BS, MSc, Salt Lake City, UT
Mike Anderson, MSc, Salt Lake City, UT
Christopher E. Pelt, MD, Salt Lake City, UT

The use of liposomal bupivacaine was associated with a greater frequency of MUA after primary TKA compared to a modified Ranawat cocktail.

Is Epinephrine Required in Periarticular Injection Cocktail for Total Knee Arthroplasty - A Prospective, Randomized, Double-Blind Comparison Study

Choong Hyeok H. Choi, MD, Seoul, Republic of Korea
Dong Yi Kong, Inchon, Republic of Korea
Jeonghan Oh, Seoul, Republic of Korea
Won Rak Choi, Seoul, Republic of Korea
Young Il Ko, Seoul, Republic of Korea

The use of epinephrine in the periarticular injection used as a way of pain control after total knee arthroplasty did not show any difference in postoperative acute pain control.

Patient Point of Entry in Total Knee Arthroplasty: Does Clinic vs. Private Office Affect Inpatient Narcotic Consumption?

Afshin Anoushiravani, MD, New York, NY
Scott Friedlander, BA, MPH, New York, NY
James Feng, MD, New York, NY
Daniel Waren, MSPH, New York, NY
Andrew Yoo, MD, San Diego, CA
Jonathan M. Vigdorchik, MD, New York, NY
James D. Slover, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY

Patients presenting to clinic are at risk for increased inpatient narcotic consumption. However, controlling for differences in patient demographics, narcotic consumption is similar.

Cryoneurolysis Prior to Total Knee Arthroplasty Reduces Postoperative Pain and Opioid Consumption

William M. Mihalko, MD, PhD, Germantown, TN
Anita Kerhof, MS, RN, Memphis, TN
James L. Guyton, MD, Memphis, TN
John R. Crockarell, MD, Collierville, TN
James W. Harkess, MD, Collierville, TN
Marcus C. Ford, MD, Memphis, TN

Cryoneurolysis treatment prior to primary TKA in this prospective randomized study has shown to decrease pain scores and narcotic use after surgery.

Tramadol in Knee Osteoarthritis: Should it Be a Strong Recommendation by AAOS?

Adam Driesman, MD, New York, NY
Daniel J. Kaplan, BA, New York, NY
James Feng, MD, New York, NY
Daniel Waren, MSPH, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
Patrick A. Meere, MD, New York, NY
Ivan Fernandez-Madrid, MD, New York, NY
James D. Slover, MD, New York, NY
William B. Macaulay, MD, New York, NY

When comparing patients who take tramadol preoperatively to patients who are opiate naive, the tramadol use patient is correlated with significantly less improvement in functional outcomes.

Preemptive Analgesia with Extended-Release Oxycodone is Associated with More Pain following Total Knee Arthroplasty

Herbert J. Cooper, MD, New York, NY
Akshay Lakra, MBBS, MD, New York, NY
Robert Maniker, MD, New York, NY
Thomas R. Hickernell, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Jeffrey A. Geller, MD, New York, NY

Patients who were given preemptive long-acting opioids immediately prior to TKA experienced more pain and ambulated shorter distances postoperatively as compared to those who were not.

Mortality and Morbidity of Operative Management of Geriatrics Ankle Fractures Varies Based on Patient Age

Joseph A. Gil, MD, Providence, RI
Justin E. Kleiner, BS, Providence, RI
Avi Goodman, MD, Providence, RI
Devin F. Walsh, MD, Providence, RI
Lindsay R. Kosinski, MD, Providence, RI
Raymond Y. Hsu, MD, East Greenwich, RI

Open reduction and internal fixation of ankle fractures in octogenarians and nonagenarians is associated with higher 30-day mortality and morbidity compared to the 65-79 year old group.
Tuesday Educational Programs

1:36 PM  PAPER 167
Ankle Fractures: Utility of Ottawa Ankle Rules and Clinical Practice
Jordan Murphy, BS, Washington, DC
David Weiner, MD, Baltimore, MD
Joshua Kotler, MD, Norfolk, VA
Brian P. McCormick, BS, Kensington, MD
Douglas C. Johnson, BS, MS, Washington, DC
David Milzman, MD, Washington, DC
Lew C. Schon, MD, Baltimore, MD
Adding an age cutoff of 65 for Ottawa ankle rules can improve its utility as a screening tool.

1:42 PM  PAPER 168
Lower Extremity Fracture Immobilization in an Austere Environment: A Comparative Study of Military Special Operations Medical Personnel using a SAM Splint vs. a New Novel One-Step Spray on Foam
Kevin D. Martin, DO, Fountain, CO
Alicia Unangst, DO, Honolulu, HI
Jaime Chisholm, MBA, Honolulu, HI
Our current study suggests that the SAM splint cannot protect against motion, traction, or provide neurological support regardless of how good or experienced the provider is at applying the splint.

1:54 PM  PAPER 169
Radiographic Parameters are Poorly Correlated with Patient Centered Outcomes in Hallux Valgus Surgery
Michael Matthews, Washington, DC
Erin E. Klein, DPM, MS, Grayslake, IL
Angie Youssef, North Chicago, IL
Lowell S. Weil, DPM, Lake Forest, IL
Matthew Sorensen, DPM, Des Plaines, IL
Adam Fleischer, DPM, MPH, Vernon Hills, IL
Mitchell B. Sheinkop, MD, Chicago, IL
The study presented examines the relationship between patient-reported outcome measures and radiographic outcome in hallux valgus surgery to determine if any correlation between the two exists.

2:00 PM  PAPER 170
Added Value of the Akin Osteotomy in Hallux Valgus Corrective Surgery? An Analysis of Patient-Reported Outcomes in 92 Subjects
Adam Fleischer, DPM, MPH, Vernon Hills, IL
Jeeten Singha, DPM, Chicago, IL
Lowell S. Weil, DPM, Lake Forest, IL
Erin E. Klein, DPM, MS, Grayslake, IL
Shruti Dosi, DPM, Chicago, IL
Mitchell B. Sheinkop, MD, Chicago, IL
Lowell S. Weil, DPM, Des Plaines, IL
We found similar patient-reported outcomes in subjects undergoing an added Akin osteotomy and those that had scarf bunionectomy alone. Akin procedures may not offer added benefit beyond aesthetics.

2:06 PM  PAPER 171
Comparison of Combination Weil Metatarsal Osteotomy and Direct Plantar Plate Repair Versus Weil Metatarsal Osteotomy Alone for Forefoot Metatarsalgia
Adam Fleischer, DPM, MPH, Vernon Hills, IL
Erin E. Klein, DPM, MS, Grayslake, IL
Michael Bowen, DPM, Des Plaines, IL
Tim McConn, Pittsburgh, PA
Mitchell B. Sheinkop, MD, Chicago, IL
Lowell S. Weil, DPM, Lake Forest, IL
Patients undergoing a concomitant plantar plate repair in addition to a shortening osteotomy for metatarsalgia reported significantly better FAOS (QoL and Pain) scores at one year.

2:18 PM  PAPER 172
Long-Term Follow Up of Cheilectomy for Treatment of Hallux Rigidus
Eliezer Sidon, MD, Raanana, Israel
Joshua Wynne, Philadelphia, PA
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Rachel Shakked, MD, Media, PA
Daniel J. Fuchs, MD, Philadelphia, PA
Ryan G. Rogero, BS, Philadelphia, PA
David I. Pedowitz, MD, MS, Villanova, PA
Joseph N. Daniel, DO, Stratford, NJ
Steven M. Raikin, MD, Philadelphia, PA
At long-term follow up, cheilectomy for treatment of hallux rigidus (HR) demonstrates sustained pain relief, with a lower grade HR preoperatively associated with greater long-term improvement in pain.

2:24 PM  PAPER 173
Cost Comparison of Synthetic Cartilage Implant versus First Metatarsophalangeal Arthrodesis
Shane Rothermel, MD, Hummelstown, PA
Maegan Tupinio, Hershey, PA
Jesse L. King, BS, Hershey, PA
Kaitlin L. Saloky, BS, Hershey, PA
Kempland C. Walley, Hershey, PA
Paul J. Juliano, MD, Hershey, PA
Michael C. Aynardi, MD, Hershey, PA
This study set out to perform a cost comparison between the gold standard MTP arthrodesis and Cartiva implant to determine which treatment modality is more cost-effective based on direct costs.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
2:30 PM  PAPER 174

◆ A Randomized Placebo-Controlled Trial of a Single Intraoperative Infiltration of CA-008 for Pain Control after Bunionectomy
Edward Diao, MD, San Francisco, CA
Fardin Hakakian, ACNP-BC, ATC, Tarzana, CA
Neil Singla, MD, Pasadena, CA
Carole N. Hodge, PhD, San Francisco, CA
John Donovan, MD, San Francisco, CA
Mike Royal, MD, JD, San Francisco, CA

This is a first-in-human single ascending dose safety, efficacy, and PK study of CA-008 infiltration after bunionectomy which includes assessments of pain response and wound healing.

Discussion

2:42 PM  PAPER 175

Correlation Between Self-Reported Pain Tolerance and Opioid Pain Medication Use After Foot and Ankle Surgery
Laura E. Sokil, BS, Philadelphia, PA
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Ryan G. Rogero, BS, Philadelphia, PA
Daniel J. Fuchs, MD, Philadelphia, PA
Brian Winters, MD, Linwood, NJ
Rachel Shakked, MD, Media, PA
David I. Pedowitz, MD, MS, Villanova, PA
Joseph N. Daniel, DO, Stratford, NJ
Steven M. Raikin, MD, Philadelphia, PA

Assessment of both a subjective description and quantitative score of a patient’s pain threshold prior to surgery may assist surgeons in tailoring postoperative pain control regimens.

2:48 PM  PAPER 176

Validated Risk Stratification System for Prediction of Adverse Events Following Open Reduction and Internal Fixation of the Ankle
Daniel D. Bohl, MD, MPH, Chicago, IL
George B. Holmes, MD, Lisle, IL
Kamran S. Hamid, MD, MPH, Chicago, IL
Johnny L. Lin, MD, Oak Brook, IL
Simon Lee, MD, Chicago, IL

We present and validate a simple point-scoring risk stratification system to predict the risk of adverse events following open reduction and internal fixation of the ankle.

2:54 PM  PAPER 177

Assessment of Radiographic Image Adequacy in Current Orthopaedic Foot and Ankle Literature
Daniel C. Farber, MD, Philadelphia, PA
Brandon Eilberg, BS, Philadelphia, PA
Alejandro D. Miranda, MD, Santa Monica, CA

As online publication now allows more imaging to be available without the constraints of image publishing costs, new imaging standards should be implemented to substantiate technique article claims.

Discussion

3:06 PM  PAPER 178

Foot Surgery-Related Malpractice Litigation
Davis Hartnett, BS, Yarmouth Port, MA
Adam E. Eltorai, Providence, RI
Alan H. Daniels, MD, Providence, RI

This study investigates the clinical properties of malpractice lawsuits concerning foot surgery across specialties, and their association with trial outcomes and resulting payments.

3:12 PM  PAPER 179

Incidence of and Risk Factors for Venous Thromboembolism after Foot and Ankle Surgery
Samuel R. Huntley, BS, Lake Worth, FL
Eva Lehtonen, BS, Birmingham, AL
Harshadkumar A. Patel, MBBS, MD, Fultondale, AL
Sameer Naranje, MS, MBBS, Birmingham, AL
Ashish Shah, MD, Birmingham, AL

Data from the National Surgical Quality Improvement Program were analyzed to report the incidence of and risk factors for thrombembolism among patients receiving orthopaedic foot and ankle surgery.

3:18 PM  PAPER 180

Durability of Smoking Cessation for Elective Lower Extremity Orthopaedic Surgery
Danica Smith, BS, Wilmington, DE
Michael McTague, MPH, Boston, MA
Michael J. Weaver, MD, Boston, MA
Jeremy T. Smith, MD, Boston, MA

A retrospective cohort study was performed to identify the most effective smoking cessation techniques in patients undergoing elective lower extremity orthopaedic surgery.

Discussion

1:30 PM - 3:30 PM  PAPER PRESENTATIONS – GLOBAL PERSPECTIVES

1:30 PM  PAPER GP-073

Does Preoperative Adhesive Capsulitis (Frozen Shoulder) Combined with Rotator Cuff Tear Alter the Clinical Outcome after Arthroscopic Repair?
Sanghoon Chae, Seoul, Republic of Korea
Jeung Y. Jeong, MD, Seoul, Republic of Korea
Jae Woo Shim, Seoul, Republic of Korea
Hyunbo Sim, Seoul, Republic of Korea
Joo-hwan Kim, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea

Preoperative frozen shoulder had a positive effect on cuff healing but had a negative effect on most of the functional outcomes, including ROM up to one year postoperatively.

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1:36 PM  PAPER GP-277
Prediction of the Irreparability of Rotator Cuff Tears  
In-Bo Kim, MD, Busan, Republic of Korea  
Dong-Wook Jung, MD, Busan, Republic of Korea
Irreparability of rotator cuff tears is affected by chronic pseudoparalysis, tear size, acromiohumeral distance, tangent sign, fatty infiltration of supraspinatus, and tendon involvement.

1:42 PM  PAPER GP-278
The Learning Curve of Superior Capsule Reconstructions  
Jarret M. Woodmass, MD, Calgary, AB, Canada  
Eric R. Wagner, MD, Atlanta, GA  
Kyle Borque, MD, Boston, MA  
Michelle J. Chang, BS, Boston, MA  
Kathryn M. Welp, Cambridge, MA  
Laurence D. Higgins, MD, Brookline, MA  
Jon J. Warner, MD, Boston, MA
Superior capsule reconstruction performed for large to massive rotator cuff tears has a high rate of persistent pain and limited function leading to clinical failure in 65% (n= 22/34) of patients.

2:06 PM  PAPER GP-282
Subacromial Spacer as a Biomechanical Augmentation for Partial Repair of Rotator Cuff Tear: Clinical and Radiological Outcomes  
Paolo Paladini, MD, Cattolica, Italy  
Antonio Padolino, MD, Anzio, Italy  
Giovanni Merolla, MD, Cattolica, Italy  
Giuseppe Porcellini, MD, Modena, Italy  
Francesco Fauci, Cattolica, Italy
Subacromial spacer as a biomechanical augmentation for partial rotator cuff repair: clinical and radiological outcomes.

2:12 PM  PAPER GP-285
Prospective Sensor Controlled Compliance Analysis of the Shoulder Abduction Brace after Rotator Cuff Repair  
Florian Grubhofer, Zurich, Switzerland  
Christian Gerber, MD, Zurich, Switzerland  
Dominik C. Meyer, MD, Zurich, Switzerland  
Karl Wieser, MD, Zurich, Switzerland  
Samy Bouaicha, MD, Zurich, Switzerland
The postoperative rehabilitation in an abduction brace after rotator cuff repair is commonly used. This study shows that the wearing compliance is lower than 50% of the demanded wearing time.

2:26 PM  PAPER GP-562
Primary Arthroscopic Stabilization for a First-Time Anterior Dislocation of the Shoulder: Long-Term Follow Up of a Randomized, Double-Blind Trial  
Liam Yapp, MBCHB, MRCSED, Edinburgh, United Kingdom  
Jamie A. Nicholson, MBCHB, MRCSED, Edinburgh, United Kingdom  
Christopher M. Robinson, MD, Edinburgh, United Kingdom
This study reports the long-term follow up of a randomized, double-blind trial assessing the efficacy of primary arthroscopic stabilization for a first-time anterior dislocation of the shoulder.

2:52 PM  PAPER GP-563
First-Time Shoulder Dislocation in Young Active Patients: 10 Years of Experience in Acute Treatment  
Angelo De Carli, MD, Rome, Italy  
Riccardo Maria Lanzetti, Rome, Italy  
Antonio Vadala, MD, Rome, Italy  
Domenico Lupariello, Roma, Italy  
Eduardo Gaj, Rome, Italy  
Guglielmo Ottaviani, MD, Roma, Italy  
Andrea Ferretti, MD, Rome, Italy
Surgical treatment of first episode of anterior glenohumeral dislocation in younger patients is associated with better clinical and functional results.

2:46 PM  PAPER GP-685
A Higher Reoperation Rate Following Arthroplasty for Failed Fixation versus Primary Arthroplasty for the Treatment of Proximal Humerus Fractures: A Retrospective, Population Based Study  
Lauren Nowak, MSc, Toronto, ON, Canada  
Michael D. McKee, MD, FRSCS, Phoenix, AZ  
Emil H. Schemitsch, MD, London, ON, Canada
These database results suggest that primary arthroplasty may be a better option for patients in whom prognostic factors suggest a high complication rate following ORIF.

2:52 PM  PAPER GP-691
Socioeconomical Status Influence in Proximal Humeral Fractures Outcomes: A Multicentric Study  
Joan Miquel, Barcelona, Spain  
Carlos Torrens, MD, Castelldefels, Spain  
Fernando Santana Perez, MD, Barcelona, Spain
The effect of socioeconomic factors had higher impact than fracture pattern on functional scores.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Effect of Triamcinolone Acetonide on Stiffness after Operative Treatment of Proximal Humerus Fracture  
Hyo-Jin Lee, MD, Seoul, Republic of Korea  
Yang-Soo Kim, MD, Seoul, Republic of Korea  
Youngmin Noh, MD, Seoul, Republic of Korea  
Postoperative glenohumeral injection of triamcinolone after internal fixation of proximal humerus fracture induces faster recovery of ROM and reduces pain especially during the early period of rehab.

A Comparison of Radiofrequency-Based Microtenotomy and Arthroscopic Release of the Extensor Carpi Radialis Brevis Tendon in Recalcitrant Lateral Epicondylitis: A Prospective Randomized Controlled Study  
Jae-Hoo Lee, MD, Goyang, Republic of Korea  
Sang-Jin Shin, MD, Seoul, Republic of Korea  
In Park, Seoul, Republic of Korea  
Seungyong Sung, MD, Incheon City, Republic of Korea  
Radiofrequency-based microtenotomy is as effective as arthroscopic release to treating recalcitrant lateral epicondylitis with the advantages of the reliable outcomes and shorter operation time.

Counterforce Bracing of Lateral Epicondylitis: A Prospective, Randomized, Double Blinded, Placebo Controlled Clinical Trial  
Martin Kroslak, MBBS, MS, Kogarah, Australia  
Kajan Pirapakaran, Canberra, Australia  
George A. Murrell, MD, Kogarah, Australia  
Counterforce bracing in acute tennis elbow provides significant improvements in pain relief and function, when compared to placebo bracing, over the short and medium term.

The Role of Platelet-Rich Plasma Injections vis-a-vis Steroids in Lateral Epicondylitis - Results from a Randomized Trial  
Vishesh Khanna, New Delhi, India  
Prateek K. Gupta, FRCS (Ortho), MBBS, New Delhi, India  
Sirshendu Roy, ACNP-BC, ATC, Hindmotor, India  
Ashis Acharya, MS, New Delhi, India  
Kamini Khillan, MD, New Delhi, India  
Senthil N. Sambandam, MD, Morgantown, WV  
This randomized trial supports the use of platelet-rich plasma vis-a-vis steroid injections in tennis elbow. Steady improvements in pain and function can be expected with the former at 3 months.

Cultural Considerations in Education and Patient Care  
Moderator: Hassan R. Mir, MD, MBA, Tampa, FL  
Guido Marra, MD, Chicago, IL  
Successful cross-cultural patient communication is important. Course presenters review words that should not be used and those words that work best, as well as offer ways to improve your non-verbal body language. This course also is designed to help attendees implement three general principles for teaching those whose first languages is not English and/or have cultural norms and operating procedures that are significantly different from those in the United States.

Overlapping Surgery in 2019: Is It OK and How Should I Do It?  
Moderator: Vani J. Sabesan, MD, Weston, FL  
I. Keys to Compliance when Running Two Rooms: How To Do It Right and Make Patients Happy  
Preetesh D. Patel, MD, Weston, FL  
II. Staggered Surgery in a Hybrid Private Practice / Academy Environment  
Thomas (Quin) W. Throckmorton, MD, Germantown, TN  
III. Overlapping Surgery in an Academic Medical Center  
Gerald R. Williams Jr, MD, Philadelphia, PA  
This will address issues around overlapping surgeries. Participants will gain understanding and expertise on overlapping surgeries: how to do it best for a variety of practice settings, addressing compliance guidelines, and optimizing patient perception and experience.

Optimizing Outcomes and Treating Complications After Total Hip Arthroplasty  
Moderator: Jay R. Lieberman, MD, Los Angeles, CA  
John J. Callaghan, MD, Iowa City, IA  
J. Bohannon Mason, MD, Charlotte, NC  
Robert T. Trousdale, MD, Rochester, MN  
This course identifies perioperative management strategies that can improve outcomes after total hip arthroplasty and reviews prevention and treatment of common perioperative complications.
Wednesday Educational Programs

162 Outpatient Joint Replacement: Practical Guidelines for Your Program Based on Evidence, Success, and Failure
Moderator: Alexander P. Sah, MD, Fremont, CA
Charles A. DeCook, MD, Braselton, GA
Raymond Kim, MD, Cherry Hills Village, CO
R. Michael Meneghini, MD, Fishers, IN
Room 3105
Lessons can be learned from case examples of real-life challenges and failures in the ambulatory surgical center setting to help shape future success of outpatient joint replacement.

163 Arthritis of the Ankle Joint: Refining and Expanding Options in Management
Moderator: Steven L. Haddad, MD, Glenview, IL
J. Chris Coetzee, MD, Mendota Heights, MN
Paul T. Fortin, MD, Royal Oak, MI
William C. McGarvey, MD, Houston, TX
Room 4105
This course provides the attendee with the entire toolkit in managing ankle arthritis. Both joint preserving and joint sacrificing methods are explored in depth, with significant use of video tips and tricks to achieve the desired patient outcome for all procedures. Discussion makes the attendee a veteran in future patient consultation and decision making.

164 Examination of the Shoulder for Beginners and Experts
Moderator: Edward G. McFarland, MD, Lutherville, MD
W. Benjamin Kibler, MD, Lexington, KY
George A. Murrell, MD, Kogarah, Australia
Room 2401
This is designed for beginner and experienced orthopaedic providers to learn the latest on physical examination of the shoulder.

165 Orthopaedic Disaster Course: Preparing for Your Worst/Best Moment in the Operating Room
Moderator: Jacob W. Brubacher, MD, Prairie Village, KS
Carl M. Harper, MD, Boston, MA
Kevin A. Raskin, MD, Boston, MA
Michael J. Weaver, MD, Boston, MA
Room 3101
This course offers practical instruction to help prepare for and master operating room disasters and emergencies. Review anatomy and technical pearls to help avoid panic and gain control of pelvic/extremity disasters.

166 Management Strategies for Scapholunate Ligament Injuries: From Occult Injury to Arthritis
Moderator: Julie E. Adams, MD, Rochester, MN
Merlin P. Rosenwater, MD, New York, NY
Dean G. Sotereanos, MD, Pittsburgh, PA
Peter J. Stern, MD, Cincinnati, OH
Room 3504
This instructional course lecture focuses upon strategies to recognize scapholunate (SL) ligament injuries and discusses treatment options in the acute and chronic setting, with and without arthritis.

167 Pediatric Musculoskeletal Infections: What to Know, What to Do, When to Worry
Moderator: Alexandre Arkader, MD, Philadelphia, PA
James H. Conway, MD, FAAP, Madison, WI
Martin J. Herman, MD, Philadelphia, PA
Jonathan G. Schoenecker, MD, Nashville, TN
Room 4201
Didactic presentations in a case-based format followed by discussion and interaction with the audience (Q/A) attracts general and pediatric orthopedists at any stage of their practice. The following aspects of pediatric musculoskeletal (MSK) infection are covered: pertinent pathophysiology, classification, microbiology, new laboratory testing and imaging, differential diagnosis, medical and surgical treatment, complications and sequelae, infection prevention, and current research in MSK infections.

168 The Introduction of New Technology into Orthopaedic Practices
Moderator: Ronald W. Wyatt, MD, Walnut Creek, CA
Thomas C. Barber, MD, San Francisco, CA
Kevin Bozic, MD, Austin, TX
Thomas B. Fleeter, MD, Reston, VA
Room 4301
As orthopaedic surgeons adopt new technology to improve patient safety and outcomes, they should be aware of legal, regulatory, reimbursement, and operational challenges.

169 Massive, Irreparable Rotator Cuff Tears: What are Our Treatment Options?
Moderator: Joshua S. Dines, MD, New York, NY
Asheesh Bedi, MD, Ann Arbor, MI
Pascal Boileau, MD, Nice, France
Bassem T. Elhassan, MD, Rochester, MN
Room 2201
Surgical techniques to treat irreparable rotator cuff tears are reviewed including the use of patches to reinforce partial repairs, tendon transfers, superior capsular reconstruction, and reverse shoulder replacement.

170 Current Concepts in Cervical Spine Trauma
Moderator: Robert W. Molinari, MD, Pittsford, NY
Richard J. Bransford, MD, Seattle, WA
John C. France, MD, Morgantown, WV
Daniel E. Gelb, MD, Baltimore, MD
Room 2101
This course reviews current concepts in the evaluation and treatment of cervical spine trauma to include upper and subaxial cervical fractures and spinal cord injuries.

171 Top Controversies in Hip Arthroscopy
Moderator: Dean K. Matsuda, MD, Los Angeles, CA
Marc J. Philippon, MD, Vail, CO
Marc R. Safran, MD, Redwood City, CA
Thomas G. Sampson, MD, San Francisco, CA
Room 3201
Lively debates are presented on top topics generating high interest and controversy in the growing/evolving field of hip arthroscopy.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Cartilage Disease of the Patellofemoral Joint: Realignment, Restoration, Replacement
Moderator: Kevin B. Freedman, MD, Bryn Mawr, PA
Andreas H. Gomoll, MD, New York, NY
Christian Lattermann, MD, Lexington, KY
Jess H. Lonner, MD, Bryn Mawr, PA

This course reviews the entire spectrum of evaluation and treatment for patients with patellofemoral cartilage disease, including realignment, cartilage restoration surgery, and patellofemoral replacement.

Extreme Nailing: Tips and Tricks from the Experts
Moderator: Daniel S. Horwitz, MD, Danville, PA
Frank A. Liporace, MD, Englewood Cliffs, NJ
Saqib Rehman, MD, Moorestown, NJ
J. Tracy Watson, MD, Phoenix, AZ

This course focuses on fractures commonly encountered by the practicing surgeon that can be challenging to nail. Subtrochanteric, distal femur, proximal tibia, and distal tibia are covered in a “how I do it” video presentation followed by a key points slide presentation and discussion. Videos are intense.

Surgical Exposure Trends and Controversies in Extremity Fracture Care
Moderator: Clifford B. Jones, MD, FACS, Phoenix, AZ
John Anderson, MD, Grand Rapids, MI
Michael J. Gardner, MD, Redwood City, CA
Stephen Kottmeier, MD, Stony Brook, NY

Half of this course is dedicated to upper extremity, and the second half to lower extremity contemporary plating techniques. Emphasis is directed to surgical access routes, trends, and controversies, as well as anatomic dissection, patient positioning, and preoperative planning. Indication, implant insertion, outcomes, and complications are deemphasized or omitted. Questions and answers and well-edited video dissections complete the course.

Knee Preservation Surgery in the Young Adult: A Case-Based Approach with United States and International Perspectives
Moderator: Gonzalo Samitier Solis, MD, Madrid, Spain
Seongil Bin, MD, Seoul, Republic of Korea
William Bugbee, MD, San Diego, CA
Jorge Chahla, MD, Santa Monica, CA
Ramon B. Cugat, MD, Barcelona, Spain
David Dejour, MD, Lyon, France
Alan Getgood, MD, FRCS (Ortho), London, ON, Canada
Vasilios Moutzouroos, MD, Northville, MI
David Parker, MD, Chatswood, Australia
Michael J. Stuart, MD, Rochester, MN

Several cases are exposed exploring treatment options and rationale to solve difficult knee combined injuries in young adults.

Principles of Management of Common Pediatric Sports Injuries
Moderator: Shital N. Parikh, MD, Cincinnati, OH
Eric W. Edmonds, MD, San Diego, CA
Henry B. Ellis, MD, Dallas, TX
Theodore J. Ganley, MD, Philadelphia, PA
Daniel W. Green, MD, New York, NY
Benton E. Heyworth, MD, Boston, MA
Nirav K. Pandya, MD, Oakland, CA
Jess H. Lonner, MD, Bryn Mawr, PA
Kevin G. Shea, MD, Boise, ID
Eric J. Wall, MD, Cincinnati, OH

This course offers round table discussion on common pediatric sports injuries. Led by an expert faculty facilitator, it provides an interactive learning experience.

New 5-Factor Modified Frailty Index Predicts Morbidity and Mortality in Revision Total Hip Arthroplasty
Sophia A. Traven, MD, Charleston, SC
Russell A. Reeves, MD, Charleston, SC
Harris Slone, MD, Charleston, SC
Zeke Walton, MD, Charleston, SC

The mFI-5 is an effective tool at predicting postoperative complications, unplanned readmission, and 30-day mortality following rTHA.

Insulin Dependence Predicts Medical Complications Following Revision Hip and Knee Arthroplasty
Sophia A. Traven, MD, Charleston, SC
Russell A. Reeves, MD, Charleston, SC
Harris Slone, MD, Charleston, SC
Zeke Walton, MD, Charleston, SC

Patients with insulin-dependence are much more likely to have medical complications, including pulmonary complications and renal insufficiency, following revision hip and knee arthroplasty.
4:12 PM  PAPER 183
The Effect of Body Mass Index in 30-Day Complications after Revision Total Hip and Total Knee Arthroplasty
Alexander L. Roth, MD, Cleveland Heights, OH
Jessica L. Churchill, MD, University Heights, OH
Jaiiben George, MBBS, Cleveland, OH
Anton Khlopos, MD, Elmwood Park, IL
Robert M. Molloy, MD, Avon Lake, OH
Michael A. Mont, MD, New York, NY
Nicolas S. Piuzzi, MD, Shaker Heights, OH
Carlos A. Higuera Rueda, MD, Weston, FL

Effect of BMI on 30-day readmissions and complications after aseptic revision THA and aseptic revision TKA, considering BMI as both a categorical and continuous variable.

Discussion

4:24 PM  PAPER 184
Evaluation of the Spine is Critical in Patients with Recurrent Instability after Total Hip Arthroplasty
Jonathan M. Vigdorchik, MD, New York, NY
Nima Eftekhary, MD, New York, NY
Ameer M. Elbuluk, MD, Los Angeles, CA
Matthew P. Abdel, MD, Rochester, MN
Aaron J. Buckland, FRACS, MBBS, New York, NY
Ran Schwarzkopf, MD, New York, NY
Seth A. Jerabek, MD, New York, NY
David J. Mayman, MD, New York, NY

Using a new Hip-Spine Classification System in revision THA, we demonstrated a significant decrease in the risk of recurrent instability compared to a control group.

4:30 PM  PAPER 185
Cluster Hole Versus Solid Cup in Total Hip Arthroplasty: A Randomized Control Trial
Rory Gallen, Perth, Australia
Riaz Khan, FRACS, FRCS, Nedlands, Australia
Samantha Haebich, PT, Nedlands, Australia
Jonathan C. Coward, MBBS, East Perth, Australia

This 10-year randomized control trial highlights the need for further research into the use of cluster-hole components instead of their solid-backed counterparts.

Discussion

4:36 PM  PAPER 186
Long-Term Results of Tripolar Constrained Total Hip Arthroplasty: A Minimum Follow Up of 10 Years
Moataz El-Husseiny, Stanmore, United Kingdom
Bassam A. Masri, MD, FRCS, Vancouver, BC, Canada
Clive P. Duncan, MD, MSc, Vancouver, BC, Canada
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada

Fully constrained liners are used to treat recurrent dislocations or patients at high risk after total hip replacements. This study assessed survivorship, complications, and PROMs after 10+ years.

Discussion

4:48 PM  PAPER 187
Constrained Liner Revision is Less Effective with Each Subsequent Constrained Liner Revision at Preventing Instability in Revision Total Hip Arthroplasty
Nicholas Hernandez, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN

Patients receiving their second constrained liner are 6.5-fold more likely to have a dislocation requiring revision compared to those receiving their first constrained liner.

Discussion

5:00 PM  PAPER 188
One- or Two-Stage Revision Hip Arthroplasty for the Treatment of Chronic Periprosthetic Joint Infection? A Mean Six-Year Follow Up Study
Jose I. Onativia, MD, Buenos Aires, Argentina
Pablo A. Slullitel, MD, Buenos Federal, Argentina
Ignacio Cima, Córdoba Capital, Argentina
Gerardo Zanotti, Buenos Aires, Argentina
Fernando M. Comba, Buenos Aires, Argentina
Francisco Piccaluga, MD, Buenos Aires, Argentina
Martin Buttoro, MD, Buenos Aires, Argentina

Retrospective study comparing one- vs. two-stage revision hip arthroplasty; no differences in eradication rate at mean six years follow up.

5:12 PM  PAPER 189
Outcomes of Non-Oncologic Total Femoral Replacement at an Orthopaedic Specialty Hospital
Alexander Christ, MD, New York, NY
Logan Mendez, BA, New York, NY
Elizabeth Gausden, MD, New York, NY
Jason L. Blevins, MD, New York, NY
Mathias P. Bostrom, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Total femoral replacement in the non-oncologic setting is a limb-salvage option for massive bone loss, keeping > 80% patients ambulatory. However, the risk of reoperation and infection remains high.

Discussion

5:18 PM  PAPER 190
Organism Profile Causing Periprosthetic Joint Infections after Total Joint Arthroplasty: How has this Profile Changed Over Time?
Hannah Groff, BA, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Santiago Restrepo, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study investigated whether there have been changes in the organism profile causing PJI over time.
5:18 PM  PAPER 191
**Association Between Hospital Volume and Outcomes After Revision Total Joint Arthroplasty: A Study of 29,948 Cases**
*Benjamin Ricciardi, MD, Rochester, NY*
Andrew Liu, MD, Rochester, NY
Bowen Qiu, MD, Rochester, NY
Thomas G. Myers, MD, Pittsford, NY
Caroline Thrukumaran, Rochester, NY

Overall, our results don’t provide strong support for the regionalization of revision TJA services to the highest volume institutions.

5:24 PM  PAPER 192
**The Feasibility of Outpatient Revision Total Hip Arthroplasty in Selected Patients**
*Adolph V. Lombardi, Jr, MD, New Albany, OH*
Keith R. Berend, MD, New Albany, OH
Michael J. Morris, MD, New Albany, OH
David A. Crawford, MD, Columbus, OH
Joanne B. Adams, BFA, CMI, New Albany, OH

In 44 outpatient revision THA, presence of comorbidities was not associated with risk of complications, and no major complications, readmissions, or reoperations occurred within 90 days.

5:36 PM  PAPER 193
**Conversion of Failed Hemiarthroplasty to Total Hip Arthroplasty has Similar Outcomes and Costs as Revision Total Hip Arthroplasty**
*Nicholas Hernandez, MD, Rochester, MN*
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

Conversion of failed hemiarthroplasty to total hip arthroplasty has similar outcomes and costs as revision total hip arthroplasty.

5:42 PM  PAPER 194
**Why are Contemporary Revision Total Hip Arthroplasties Failing? An Analysis of 2,500 Cases**
*Ashton Goldman, MD, Rochester, MN*
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

In over 2,500 contemporary revision THAs, we found an 88% survivorship free of any rerevision at 10 years with instability being the most common failure mode.

5:48 PM  PAPER 195
**Diagnostic Accuracy of the Alpha-Defensin Test for Periprosthetic Joint Infection in Patients with Inflammatory Diseases**
*Yushi Miyamae, MD, PhD, Yokohama, Japan*
Jaiben George, MBBS, Cleveland, OH
Alison K. Klika, MS, Cleveland, OH
Wael K. Barsoum, MD, Weston, FL
Carlos A. Higuera Rueda, MD, Weston, FL

The alpha-defensin test provides useful information with high accuracy in diagnosing PJIs in patients with inflammatory diseases.
TUESDAY EDUCATIONAL PROGRAMS

4:24 PM  PAPER 199
Postoperative Mobilization after Rotator Cuff Repair: Sling versus Nothing: A Randomized Prospective Study
Alexandre Laedermann, MD, Meyrin, Switzerland
Jérôme Tirefort, MD, Meyrin, Switzerland
Philippe Collin, St. Gregoire, France
Adrien J. Schwitzguébel, MD, Le Mont-sur-Lausanne, Switzerland

Absence of postoperative sling after rotator cuff repair was associated with better postoperative outcomes, greater mobility, and lower pain.

4:30 PM  PAPER 200
Do Relaxation Exercises Decrease Postoperative Pain after Rotator Cuff Repair? A Randomized Controlled Trial
Danielle G. Weekees, MD, Egg Harbor Township, NJ
Eric Wicks, MD, Philadelphia, PA
Christopher J. Hadley, BS, Barnevagat, NJ
Aaron Carter, MD, Bethesda, MD
Zaira Chaudhry, MPH, Scranton, PA
Matthew D. Pepe, MD, Linwood, NJ
Bradford S. Tucker, MD, Ocean City, NJ
Kevin B. Freedman, MD, Bryn Mawr, PA
Fotios P. Tjoumakaris, MD, Ocean View, NJ

The purpose of this investigation was to evaluate whether relaxation exercises can reduce postoperative pain and the use of narcotics after arthroscopic rotator cuff repair.

4:36 PM  PAPER 201
Is Local Administration of Parathyroid Hormone Effective to Tendon and Bone Healing Mechanism in the Rotator Cuff Tear Rat Model?
Jong Pil Yoon, MD, Daegu, Republic of Korea
Seek Won Chung, MD, Seoul, Republic of Korea
Jee Wook Yoon, Daegu, Republic of Korea
Youngsoo Jung, Daegu, Republic of Korea
Seung-Gi Min, Daegu, Republic of Korea

We found improved biomechanical and histologic outcomes for PTH administration in rat rotator cuff model, and there are similar results of systemic injection and local administration.

4:48 PM  PAPER 202
Partial-Thickness Rotator Cuff Tear Itself Did Not Cause Shoulder Pain or Muscle Weakness in Baseball Players
Rei Morikura, MD, Gekutsukakecho, Japan
Teruhisa Mihata, MD, PhD, Takatsuki, Japan
Akihiko Hasegawa, MD, PhD, Osaka, Japan
Kunimoto Fukumishi, MD, Osaka, Japan
Yukitaka Fujisawa, MD, Ibariki City, Japan
Takeshi Kawakami, Takatsuki, Japan
Masashi Neo, MD, PhD, Takatsuki, Japan

Articular-sided partial-thickness rotator cuff tears did not cause shoulder pain and muscle weakness in university baseball players.

4:54 PM  PAPER 203
Survivorship of Pectoralis Major Transfer for the Treatment of Subscapularis Insufficiency
Michael D. Charles, MD, Chicago, IL
Austin V. Stone, MD, PhD, Lexington, KY
Michael Redondo, MA, Burr Ridge, IL
David R. Christian, BS, Oconomowoc, WI
Anthony A. Romeo, MD, Chicago, IL
Gregory P. Nicholson, MD, Chicago, IL
Brian J. Cole, MD, MBA, Chicago, IL

The survivorship of pectoralis major transfer for the treatment of subscapularis insufficiency.

5:00 PM  PAPER 204
What is the Effect of Age on Short-Term Postoperative Complications Following Rotator Cuff Repair?
Venkat Boddapati, MD, New York, NY
Michael Fu, MD, MS, New York, NY
Christopher S. Ahmad, MD, New York, NY
Charles M. Jobin, MD, New York, NY
William N. Levine, MD, New York, NY

Patients older than 65 years have nearly double the odds of postoperative complications (primarily respiratory and urinary) relative to patients younger than 55 after arthroscopic rotator cuff repair.

5:12 PM  PAPER 205
Preoperative Expectations of Patients Undergoing Shoulder Surgery
Vidushan Nadarajah, BA, Brooklyn, NY
Kali N. Stevens, BA, Baltimore, MD
Leah Henry, BS, Arnold, MD
Julia J. Jauregui, MD, Baltimore, MD
Michael P. Smuda, ATC, MS, Baltimore, MD
Dominic J. Ventimiglia, BS, Silver Spring, MD
Mohit Gilotra, MD, Baltimore, MD
Syed A. Hasan, MD, Baltimore, MD
R. Frank Henn, MD, Ellicott City, MD

Preoperative expectations of patients undergoing shoulder surgery are associated with multiple demographic and clinical variables, including prior surgery, employment status, and opioid use.

5:18 PM  PAPER 206
Understanding the Effects of Pain and Depression on Physical Function in Patients Undergoing Shoulder Surgery
Vidushan Nadarajah, BA, Brooklyn, NY
Josef E. Jolissaint, BS, Baltimore, MD
Scott Koenig, MD, Baltimore, MD
Julia J. Jauregui, MD, Baltimore, MD
Ashley La, BS, Baltimore, MD
Michael P. Smuda, ATC, MS, Baltimore, MD
Mohit Gilotra, MD, Baltimore, MD
Syed A. Hasan, MD, Baltimore, MD
R. Frank Henn, MD, Ellicott City, MD

Here we present an explanatory model where depression as a mediator of pain had a significant impact on physical function in patients with shoulder pathology.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Interscalene Block vs. Suprascapular Block for Shoulder Arthroscopy: A Meta-Analysis
Andrew Maye, Dublin, Ireland
Eoghan Hurley, MBCHB, Dublin, Ireland
Utkarsh Anil, BA, New York, NY
Leo Pauzenberger, MD, Vienna, Austria
Eric J. Strauss, MD, Scarsdale, NY
Hannan Mullett, FRCS (Ortho), Dublin, Ireland
Cathal Moran, MD, Dublin, Ireland
Gerard F. Curley, MBCHB, PhD, Dublin, Ireland
ISB resulted in decreased pain levels in the immediate postoperative period and opioid consumption compared to SSB.

5:36 PM PAPER 208
Surgical Treatment for Long Head of the Biceps Tendon Lesions – A Network Meta-Analysis
Utkarsh Anil, BA, New York, NY
Eoghan Hurley, MBCHB, Dublin, Ireland
Leo Pauzenberger, MD, Vienna, Austria
Hannan Mullett, FRCS (Ortho), Dublin, Ireland
Eric J. Strauss, MD, Scarsdale, NY
In this network meta-analysis, lesions of the LHBT treated with tenotomy result in a lower incidence of Popeye deformity with the open approach resulting in higher ASES scores.

5:42 PM PAPER 209
Shoulder Arthroplasty for Proximal Humerus Fracture is Associated with Increased Postoperative Complications and Hospital Burden
Venkat Boddapati, MD, New York, NY
Anita G. Rao, MD, Vancouver, WA
Michael Fu, MD, MS, New York, NY
William N. Levine, MD, New York, NY
Charles M. Jobin, MD, New York, NY
This study identified increased rates of morbidity, blood transfusions, non-home discharge, operative duration, and length of stay in patients undergoing shoulder arthroplasty for humerus fracture.

5:48 PM PAPER 210
Increasing Use of Regional Anesthesia for Shoulder Arthroscopy Has Not Changed Opioid Prescribing Patterns Postoperatively
Nicholas A. Trasolini, MD, Long Beach, CA
Hyunwoo P. Kang, MD, Los Angeles, CA
Anthony Essilfie, MD, Los Angeles, CA
Erik Mayer, BS, Los Angeles, CA
Reza Omid, MD, Irvine, CA
Seth C. Gamradt, MD, Los Angeles, CA
James E. Tibone, MD, Los Angeles, CA
George F. Hatch, MD, Los Angeles, CA
Alexander Weber, MD, Los Angeles, CA
An increasing percentage of shoulder arthroscopies are being performed with regional nerve blocks. However, there is no difference in patterns of postoperative opioid use between patients receiving regional nerve blocks and those without.

Discussion

4:00 PM - 6:00 PM
Palazzo Ballroom L
Pediatrics I (211-225): Potpourri of Pediatric Problems I
Moderators: Karl E. Rathjen, MD, Dallas, TX and Lawrence L. Haber, MD, New Orleans, LA

4:00 PM PAPER 211
Predicting Scoliosis Progression Based on Humeral Skeletal Maturity
Don Li, New Haven, CT
Stephen Devries, BS, New Haven, CT
Jonathan Cui, BS, New Haven, CT
Joseph B. Kahan, MD, Meriden, CT
Logan Petit, MD, New Haven, CT
Ronan Talty, BS, Bayside, NY
Daniel R. Cooperman, MD, Trumbull, CT
Brian G. Smith, MD, Avon, CT
We describe how a novel humeral head ossification staging system combined with curve size at presentation strongly correlates with the probability of curve progression in children with scoliosis.

4:06 PM PAPER 212
Is Spinal Growth Finished at Sanders Stage 7 in Females with Adolescent Idiopathic Scoliosis?
Olivia Grothaus, BA, Lexington, KY
Domingo Molina, MD, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Elizabeth W. Hubbard, MD, Raleigh, NC
Vishwas R. Talwalkar, MD, Lexington, KY
Henry J. Iwinski, MD, Lexington, KY
Ryan D. Muchow, MD, Lexington, KY
Clinically significant curve progression still occurs in females after Sanders 7 digital skeletal age with adolescent idiopathic scoliosis.

4:12 PM PAPER 213
Characterizing Current Use in Growth-Friendly Implants for Spinal Deformity: A 10-Year Update
Walter B. Klyce, BA, Baltimore, MD
Stuart L. Mitchell, MD, Baltimore, MD
Jeff Pawelek, San Diego, CA
David L. Skaggs, MD, Los Angeles, CA
James O. Sanders, MD, Rochester, NY
Suken A. Shah, MD, Wilmington, DE
Richard E. McCarthy, MD, Little Rock, AR
Scott J. Luhmann, MD, St. Louis, MO
Peter F. Sturm, MD, Cincinnati, OH
Behrooz A. Akbarnia, MD, San Diego, CA
Paul D. Sponseller, MD, Baltimore, MD
Growing Spine Study Group
Growth-friendly implant use has gone up steadily for the past 25 years; age at 1st surgery has gone up for the last 10. Magnetic rods now comprise >85% of new growth-friendly implants in the US.

Discussion
Tuesday Educational Programs

4:24 PM  PAPER 214
Cumulative Anesthesia Exposure in Patients Treated for Early Onset Scoliosis
Fady Baky, Columbus, OH
Todd A. Milbrandt, MD, Rochester, MN
Randall P. Flick, MD, MPH, Rochester, MN
A. Noelle Larson, MD, Rochester, MN
Disease severity (Cobb angle), non-idiopathic diagnoses, and longer follow up within our institution were associated with increased hours of anesthesia exposure in pediatric scoliosis patients.

4:30 PM  PAPER 215
Assessing the Need for Common Perioperative Laboratory Tests in Posterior Spinal Fusion for Adolescent Idiopathic Scoliosis
Alexander J. Adams, BS, Philadelphia, PA
Patrick J. Cahill, MD, Philadelphia, PA
Jack M. Flynn, MD, Philadelphia, PA
Wudbhav N. Sankar, MD, Wynnewood, PA
Many perioperative lab orders may be unnecessary in posterior spinal fusion for adolescent idiopathic scoliosis, subjecting patients to extraneous costs and needlesticks.

4:36 PM  PAPER 216
Intermediate Term Annualized Curve Progression of Adolescent Idiopathic Scoliosis Curves Measuring 40 Degrees or Greater
W T. Ward, MD, Pittsburgh, PA
Jared Crasto, MD, Pittsburgh, PA
Tanya Kenkre, PhD, Pittsburgh, PA
Maria Brooks, PhD, Pittsburgh, PA
Joanne A. Londino, RN, Pittsburgh, PA
James W. Roach, MD, Pittsburgh, PA
Intermediate-term annualized curve progression of adolescent idiopathic scoliosis curves measuring 40 degrees or greater in operated and nonoperated patients.

4:48 PM  PAPER 217
Elevated Dip Temperatures Do Not Cause Thermal Injury During Cast Application
David Prieskorn, DO, Novi, MI
Daniel Prieskorn, Brighton, MI
Andrew L. Prieskorn, Brighton, MI
If a clinician is using plaster or fiberglass casts, they can use any water temperature they wish without risk of thermal injury.

4:54 PM  PAPER 218
Is There Value in Radiology Reads for Pediatric Supracondylar Humerus Fractures in the Outpatient Clinic?
Jerry Y. Du, MD, Cleveland, OH
Pierre Tamer, BS, Cleveland Heights, OH
Joanne Wang, MD, Cleveland, OH
Raymond W. Liu, MD, Cleveland, OH
Dual-interpretation of radiographs obtained in outpatient clinic setting does not add clinical utility in the management of pediatric supracondylar humerus fractures.

5:00 PM  PAPER 219
How Often are Pediatric Elbow Radiographs Adequate for Interpretation?
John Schlechter, DO, Orange, CA
Daniel S. Brereton, DO, Riverside, CA
Pediatric elbow XRs can be difficult to obtain. The quality is vital to deciding upon treatment. We have developed a simple technique to obtain quality pediatric elbow XRs.

5:12 PM  PAPER 220
The Femoral Neurovascular Bundle in the Congenital Femoral Deficiency
Yoon-Hae Kwak, MD, Durham, NC
Dror Paley, MD, West Palm Beach, FL
David S. Feldman, MD, West Palm Beach, FL
Melih Civan, MD, Istanbul, Turkey
Jaroslaw M. Deszczyński, MD, PhD, Warsaw, Poland
Aaron Huser, DO, Stuart, FL
We reviewed 33 pelvic MRIs of patients with CFD and found the femoral neurovascular bundle was located significantly closer to the AIIS on the affected side when compared to the non-affected side.

5:18 PM  PAPER 221
Analysis of Femoral Head Microstructure and Vasculature Relevant to Legg-Calve-Perthes Disease
William Z. Morris, MD, Cleveland Heights, OH
Elena Chen, Dallas, TX
Raymond W. Liu, MD, Cleveland, OH
Harry K. Kim, MD, Dallas, TX
Micro-computed tomographic analysis of immature proximal femoral epiphyses suggests that anterior epiphysis may be a relative vascular watershed, predisposing to collapse in Legg-Calve-Perthes.

5:24 PM  PAPER 222
Effect of Intravenous ε-Aminocaproic Acid on Blood Loss and Transfusion Requirements after Bilateral Varus Rotational Osteotomy: A Prospective, Double-Blinded, Randomized Controlled Trial
Ishaan Swarup, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Emily Dodwell, MD, New York, NY
David M. Scher, MD, New York, NY
Aminocaproic acid is not effective in reducing blood loss and transfusion requirements after bilateral varus rotational osteotomy compared to placebo.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
5:36 PM  
**PAPER 223**  
*Pharmacologic Inhibition of Protein Degradation Prevents Contractures following Neonatal Brachial Plexus Injury: Elucidating and Correcting Contracture Pathophysiology in an Animal Model*  
Athanasia Nikolaou, PhD, Cincinnati, OH  
Liangjun Hu, MS, MD, Cincinnati, OH  
Roger Cornwall, MD, Cincinnati, OH  
This study in a mouse model of neonatal brachial plexus injury identifies elevated protein degradation as the cause of muscle contractures and shows that contractures can be pharmacologically prevented by a proteasome inhibitor.

5:42 PM  
**PAPER 224**  
*Chimeric Hematopoietic Stem Cells Infusion Improves Physiologic Performance of Mdx Duchenne Muscular Dystrophy Mice During In Situ Tibialis Anterior Load Testing*  
Mohammad S. Malik, MD, Chicago, IL  
Krzesztof B. Siemionow, MD, Homer Glen, IL  
Administration of fused chimeric stem cells helps mdx mice perform better with certain physiologic parameters during in situ tibialis anterior load testing by restoring dystrophin levels in cells.

5:48 PM  
**PAPER 225**  
*Potential Precursor Lesions to Juvenile Osteochondritis Dissecans Seen in Predilection Sites of Human Cadavers*  
Ferenc Toth, DVM, PhD, St Paul, MN  
Marc Tompkins, MD, Minneapolis, MN  
Kevin G. Shea, MD, Boise, ID  
William Fedje-Johnston, Saint Paul, MN  
Cathy S. Carlson, Saint Paul, MN  
The findings suggest that the pathogenesis of JOCD in humans is the same as animals with early vascular failure and necrosis, and this occurs years before patients become clinically symptomatic.

4:06 PM  
**PAPER 227**  
*Mapping Bone Mineral Density in the Iliosacral Region: A Novel Technique*  
Sameer Saxena, MD, Bethesda, MD  
Scott Wagner, MD, Rockville, MD  
Bone mineral density is highest at the anterior ilium and sacral body and lowest at the posterior ilium and sacral ala. To maximize fixation strength, hardware should be placed through these regions.

4:12 PM  
**PAPER 228**  
*The Local Application of Vancomycin in Spine Surgery Does Not Result in Increased Vancomycin Resistant Bacteria – 10-Year Data*  
Krishn Khanna, MD, San Francisco, CA  
Frank Valone, MD, San Francisco, CA  
Alexander Tenorio, San Francisco, CA  
Shane Burch, FRCSC, MD, San Anselmo, CA  
Sigurd H. Berven, MD, San Francisco, CA  
Bobby Tay, MD, San Francisco, CA  
Vedat Deviren, MD, San Francisco, CA  
Serena S. Hu, MD, Redwood City, CA  
Topical vancomycin within the surgical site is not correlated with vancomycin resistant bacteria. There was an increased rate of gram-negative organisms in infections after vancomycin application.

4:24 PM  
**PAPER 229**  
*Mesenchymal Stromal Cell Derived Osteoprogenitors for the Treatment of Degenerative Disc Disease*  
Zhiyong Poon, Singapore, Singapore  
Kimberley Tam, PhD, Beaverton, Singapore  
Lei Jiang, MBBS, Singapore, Singapore  
Mashfiqul A. Siddiqui, MD, Singapore, Singapore  
Krystyn Van Vliet, PhD, Cambridge, MA  
We demonstrate a facile and clinically relevant strategy for deriving a MSC osteoprogenitor subpopulation for spinal cell-therapy.
TUESDAY EDUCATIONAL PROGRAMS

4:30 PM  PAPER 230
Comparing Predictors of Complications following Anterior Cervical Discectomy and Fusion (ACDF), Total Disc Replacement (TDR), and Combined ACDF-TDR with Minimum Two-Year Follow Up
Neil V. Shah, MD, MS, New York, NY
Ishaan Jain, BS, Brooklyn, NY
Cameron R. Moattari, BS, Brooklyn, NY
John P. Connors, BS, Brooklyn, NY
George A. Beyer, BA, MS, Brooklyn, NY
John J. Kelly, BA, New York, NY
Sarah G. Stroud, BA, Brooklyn, NY
Jared M. Newman, MD, Brooklyn, NY
Douglas Holtern, MD, Brooklyn, NY
Vincent Chalnier, MD, New York City, NY
Nicholas H. Post, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Peter G. Passias, MD, Westbury, NY
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY
Carl B. Paulino, MD, Brooklyn, NY
Bassel Diebo, MD, Brooklyn, NY
Orthopaedic Research Laboratory of Brooklyn at SUNY Downstate

When compared to those undergoing ACDF and hybrid procedures, cervical total disc replacement patients were younger and had lower hospital costs, but had higher rates of complications and reoperation.

4:36 PM  PAPER 231
Prospective Enumeration of Opioid Consumption Patterns after Lumbar Decompression or Microdiscectomy Using a Novel Text-Messaging Data Collection Platform: Moving Toward Evidence-Based National Opioid Prescribing Guidelines
Francis Lovecchio, MD, New York, NY
Ajay Premkumar, MD, MPH, New York, NY
Jeffrey G. Stepan, MD, MSc, New York, NY
Dianna Mejia, BA, New York, NY
Daniel H. Stein, BS, New York, NY
Russel C. Huang, MD, New York, NY
Sheeraz Qureshi, MD, New York, NY
Darren R. Lebl, MD, New York, NY
Todd J. Albert, MD, New York, NY

Through use of a novel text-messaging data collection method, daily opioid use and pain levels in the initial post discharge period are defined to form the basis for future prescribing guidelines.

4:48 PM  PAPER 232
Increased Stress in Nerve Root Associated with Kyphotic Deformity and Ossification of the Posterior Longitudinal Ligament after Cervical Laminectomy: A Finite Element Analysis
Battbayar Khuyagbaatar, PhD, Yongin, Republic of Korea
Tsersenchimed Purevsuren, PhD, Yongin, Republic of Korea
Sang Hun Lee, MD, PhD, Baltimore, MD
Yoon Hyuk Kim, PhD, Yongin, Republic of Korea

Finite element model of the cervical spine and neural element complex was used to investigate the biomechanical changes in the cervical nerve root after laminectomy with various cervical alignments.

• The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

4:54 PM  PAPER 233
Trends and Outcomes in Cauda Equina Syndrome: An Analysis of Over 25,000 Patients
Eren O. Kuris, MD, Providence, RI
Will Hogan, Providence, RI
Wesley M. Durand, BS, Providence, RI
Adam E. Eltorai, Providence, RI
Alan H. Daniels, MD, Providence, RI

This investigation used the Nationwide Inpatient Sample database to identify demographic and procedural trends and recognize factors that affect outcomes in over 25,000 cauda equina syndrome patients.

5:00 PM  PAPER 234
Assessment of a Novel Risk Scoring Tool to Predict Hospital Readmission After Posterior Lumbar Spine Surgery
Saisanjana Kalagara, Tempe, AZ
Daniel Reid, MD, MPH, Cranston, RI
Adam E. Eltorai, Providence, RI
Wesley M. Durand, BS, Providence, RI
Benjamin Shapiro, MS, Woonsocket, RI
Alan H. Daniels, MD, Providence, RI

This study created a point-based readmission risk estimation tool based on pre-discharge information that can isolate patients who are at as much as five times increased risk for readmission.

Discussion

5:12 PM  PAPER 235
Racial Differences in Iliac Crest Cancellous Bone Composition: Implications for Preoperative Planning in Spinal Fusion Procedures
Woojin Cho, MD, PhD, Hartsdale, NY
Adam Nessim, BS, Bronx, NY
Ariella Applebaum, BA, BS, Bronx, NY
Jiwan Park, Seoul, Republic of Korea
Jayson Lian, Bronx, NY

Iliac crest CT measurements show significantly lower cancellous bone composition in African Americans as compared to Caucasians, which should be considered prior to use of iliac crest autograft.

Discussion

5:18 PM  PAPER 236
Cost-Effectiveness of Balloon Kyphoplasty for Patients with Acute Osteoporotic Vertebral Fractures in a Super-Aging Society
Shinji Takahashi, MD, Osaka, Japan
Masatoshi Hoshino, MD, PhD, Osaka, Japan
Hidetomi Terai, MD, PhD, Osaka, Japan
Hiromitsu Toyoda, Osaka, Japan
Akinobu Suzuki, MD, PhD, Osaka, Japan
Koji Tamai, MD, Osaka, Japan
Shoichiro Ohyama, MD, Osaka, Japan
Yusuke Hori, MD, Osaka, Japan
Hiroyuki Nakamura, MD, Osaka, Japan

This propensity score matching study demonstrated the cost-effectiveness of balloon kyphoplasty in a super-aging country, in Japan.
5:24 PM  PAPER 237
Predictive Factors of Postoperative Dysphagia in Single-level Anterior Cervical Discectomy and Fusion
Avani Vaishnav, MBBS, New York, NY
Philip A. Saville, MD, New York, NY
Steven McAnany, MD, St. Louis, MO
Catherine Himo Gang, MPH, New York, NY
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Sheeraz Qureshi, MD, New York, NY

This study compares demographics, operative factors, and patient reported outcomes in zero-profile devices and plate-graft constructs in single level ACDF and determines predictors of post-op dysphagia.

Discussion

5:36 PM  PAPER 238
Usefulness of Anterior Cervical Interbody Fusion Using Locally Harvested Bone: Minimum Five-Year Follow Up
Dae-Moo Shim, MD, Iksan, Republic of Korea
Hyun Tak Kang, Iksan, Republic of Korea
Byung Min Yoo, Iksan, Republic of Korea

Using locally harvested autobone as filling material for fusion resulted in outstanding bone union and improvement of clinical results. In long-term follow up, there was no significant difference in union rate and complication incidence.

5:42 PM  PAPER 239
Total Inpatient Morphine Milligram Equivalents Can Predict Long-Term Opioid Use After Transforaminal Lumbar Interbody Fusion
David Ge, BA, New York, NY
Aaron Hockley, FRCS, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Mohamed A. Moawad, MPH, New York, NY
Peter G. Passias, MD, Westbury, NY
Thomas J. Errico, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY
Charla R. Fischer, MD, New York, NY

Exceeding the threshold of 500 total morphine milligram equivalents in the immediate postoperative period after a TLIF is a significant risk factor predicting continued opioid use at six-month follow up.

5:48 PM  PAPER 240
Thirty-Day Outcomes Between Cervical Disc Arthroplasty, Posterior Cervical Foraminotomy, and Anterior Cervical Discectomy and Fusion for Treatment of Cervical Radiculopathy; An Analysis of 18,312 Surgeries
Assem Sultan, MD, Cleveland, OH
Yatindra Patel, BS, Monroeville, PA
Ryan J. Berger, MD, Cleveland, OH
Morad Chughtai, MD, Cleveland, OH
Linsen T. Samuel, MBA, MD, Floral Park, NY
Michael P. Steinmetz, Cleveland, OH
Thomas E. Mroz, MD, Cleveland, OH

Through matched-cohort analysis, we found that CDA may offer similar or lower rates of several complications compared to ACDF and PCF when utilized for the treatment of cervical radiculopathy.

Discussion

4:00 PM - 6:00 PM  PAPER PRESENTATIONS 241-255
Room 4303
Practice Management/Rehabilitation I (241-255): Coding/Reimbursement (Practice Mgmt)
Moderator: Richard C. Mather, III, MD and Gail S. Chorney, MD, New York, NY

4:00 PM  PAPER 241
Coding Education in Residency and in Practice Improves Accuracy of Coding in Orthopaedic Surgery
Max Greenky, MD, Philadelphia, PA
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Rachel Shakked, MD, Media, PA
Kristen Nicholson, PhD, Philadelphia, PA
Steven M. Raikin, MD, Philadelphia, PA
Brian Winters, MD, Linwood, NJ
Joseph N. Daniel, DO, Stratford, NJ
David I. Pedowitz, MD, MS, Villanova, PA

This study suggests that orthopaedic surgery trainees’ knowledge of medical coding is deficient and could benefit from formal education in medical billing to enhance their ability to correctly code.
Orthopaedic Surgeons Have Inadequate Knowledge of the Cost of Common Diagnostic Imaging Studies

Blake J. Schultz, MD, Palo Alto, CA
Nathaniel Fogel, MD, Los Altos, CA
Andrea Finlay, PhD, East Palo Alto, CA
Cory A. Collinge, MD, Nashville, TN
Michael Githens, MD, Seattle, WA
Thomas F. Higgins, MD, Salt Lake City, UT
Samir Mehta, MD, Philadelphia, PA
Robert V. O’Toole, MD, Lutherville, MD
Hobie D. Summers, MD, Chicago, IL
Julius A. Bishop, MD, Palo Alto, CA
Michael J. Gardner, MD, Redwood City, CA

Billing Charge Awareness Study Group

Awareness of billing charges affects ordering behavior. Orthopaedists across training levels underestimate charges of common imaging studies and there is large variation in charges between hospitals.

Real-World Treatment Cost Outcomes among Patients with Medial Meniscus Deficiency: Results from a 24-Month Surveillance Study

Elliott Hershman, MD, New York, NY
John Jarvis, MBA, Boston, MA
Thomas Mick, MD, MS, New York, NY
Kristina Dushaj, MA, New York, NY
Jonathan J. Elsner, PhD, Cambridge, MA

Study assessing the substantial, direct treatment costs associated with treating acute or degenerative meniscus deficiency in a US population, during a 24-month observational treatment period.

In-Office Ultrasound Guided Intra-Articular Hip Injection vs. Hospital and Operating Room Based Fluoroscopic Guided Intra-Articular Hip Injection: A Cost Minimization Analysis

Michael P. Palmer, MD, Mason, OH
Victoria Das, BS, Louisville, KY
Jessica Pykosz, PA-C, Cincinnati, OH
Michael B. Ellman, MD, Englewood, CO
Sanjeev Bhatia, MD, Mason, OH

Office-based ultrasound guided intra-articular hip injections are an extremely cost-effective treatment option for patients compared with hospital-based alternatives.

A Decade of NSQIP: Trends and Reimbursement in Common Orthopaedic Procedures

Daniel J. Johnson, MD, Chicago, IL
Matthew J. Hartwell, MD, Chicago, IL
Ryan E. Harold, MD, Chicago, IL
Daniel J. Nagle, MD, Chicago, IL
David M. Kalainov, MD, Chicago, IL

Although several procedures changed in the frequency performed over the time intervals studied, we found no association between reimbursement rates and procedures being performed more frequently.

Payment and Work Relative Value Units Misvaluation of Shoulder and Elbow Surgery by Operative Time – A CMS and NSQIP Analysis

Suresh K. Nayar, MD, Baltimore, MD
Richard L. Skolasky, ScD, Baltimore, MD
Dawn LaPorte, MD, Baltimore, MD
Aviram Giladi, MD, MS, Baltimore, MD

This study explores the relationships between payment, RVU, and operative times in 29 of the most common shoulder and elbow surgeries using CMS and NSQIP databases.

A Decade of NSQIP: Trends and Reimbursement in Arthroscopic Surgery

Daniel J. Johnson, MD, Chicago, IL
Matthew J. Hartwell, MD, Chicago, IL
Richard W. Nicolay, MD, Chicago, IL
Robert A. Christian, MD, Chicago, IL
Michael A. Terry, MD, Chicago, IL
Vehniah K. Tjong, MD, Chicago, IL

ACS NSQIP provides valuable information regarding procedures being performed at an increased frequency and reimbursement rates can differ by greater than 10 RVU/hr depending on procedure.

One-Stage Periprosthetic Joint Infection Reimbursement – Is It Worth The Effort?

Thomas K. Fehring, MD, Charlotte, NC
Keith Fehring, MD, Charlotte, NC
Brian M. Curtin, MD, Charlotte, NC
Bryan D. Springer, MD, Charlotte, NC

One-stage procedures for PJI are reimbursed at approximately 1/3 the hourly rate of a primary procedure, which may discourage surgeons from selecting this treatment alternative.

Utilization and Reimbursement Trends Based on Certificate-of-Need in Cervical Microdecompression

Abiram Bala, MD, Menlo Park, CA
Chason Ziino, MD, Menlo Park, CA
Serena S. Hu, MD, Redwood City, CA
Kirkham B. Wood, MD, Redwood City, CA
Todd Alamir, MD, Redwood City, CA
Ivan Cheng, MD, Redwood City, CA

We studied the impact of certificate of need (CON) programs on cervical microdecompression economic trends. Only in non-CON outpatient settings was there increased reimbursement.
5:12 PM  PAPER 250
Are Cervical Microdiscectomy Utilization and Reimbursement Impacted by Certificate-of-Need Programs?
Abiram Bala, MD, Menlo Park, CA
Chason Ziino, MD, Menlo Park, CA
Serena S. Hu, MD, Redwood City, CA
Kirkham B. Wood, MD, Redwood City, CA
Todd Alamin, MD, Redwood City, CA
Ivan Cheng, MD, Redwood City, CA
We studied how certificate of need (CON) programs impact cervical microdiscectomy economic trends. Outpatient settings in non-CON states were the only locations with increased reimbursement.

5:18 PM  PAPER 251
Cost Analysis for Patients Treated for Bone and Soft Tissue Sarcomas: Index Admissions and Readmissions
Gabriel Makar, Rutherford, NJ
Karina W. Lo, Boston, MA
Christina J. Gutowski, MD, Camden, NJ
John Gaughan, PhD, Philadelphia, PA
Tae W. Kim, MD, Camden, NJ
The cost to treat a bone and soft tissue sarcoma is high; compared to a joint replacement, treatment cost of soft tissue sarcoma is equivalent whereas the cost for bone sarcoma is nearly double.

5:24 PM  PAPER 252
Elixhauser Comorbidities Can Predict Medical Severity-Diagnosis Related Group Classification in Total Joint Arthroplasty
Sean P. Ryan, MD, Durham, NC
Daniel Goltz, MBA, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
David E. Attarian, MD, Durham, NC
Samuel S. Wellman, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC
William A. Jiranek, MD, Durham, NC
Elixhauser comorbidities may provide insight into MS-DRG classification by CMS for total joint arthroplasty.

5:30 PM  PAPER 253
How Do Patient Expectations Affect their Satisfaction with their Providers?
Scott Eskildsen, MD, Durham, NC
Sophia N. Brancazio, BA, Chapel Hill, NC
Ganesh V. Kamath, MD, Chapel Hill, NC
Christopher W. Olcott, MD, Chapel Hill, NC
Daniel J. Del Gaizo, MD, Chapel Hill, NC
Reimbursement structures involving patient satisfaction should take into account that expectations may alter patient satisfaction particularly when surgical expectations go unmet.

5:42 PM  PAPER 254
Disclosures Undisclosed
Cory Janney, MD, Galveston, TX
Pejma Shazadeh Safavi, Tomball, TX
Gregory J. Schneider, BS, MS, Flower Mound, TX
Vinod K. Panchbhavi, MD, FACS, Galveston, TX
We evaluated the accuracy of disclosures in 3 orthopaedic journals over a 3 year period using the Open Payments Database provided by CMS. The accuracy was variable per journal.

5:48 PM  PAPER 255
Distribution of Orthopaedic Consults from an Urban Setting Emergency Department: A Study of Over 13,000 Consecutive Consults
Jalen Broome, University Park, MD
Richard C. Jarvis, BA, Watertown, MA
Grace Plassche, Clinton, NJ
Ariel R. Silverman, Santa Monica, CA
Ira H. Kirschenbaum, MD, Bronx, NY
This study analyzes Emergency Department orthopaedic consults in an urban setting over nine years and provides a subspecialty breakdown of the conditions requiring immediate orthopaedic attention.

Discussion

CAREER DEVELOPMENT

4:30 PM - 5:30 PM
CD6  Lifelong Learning: Teaching, Mentoring, and Work-Life Integration
Moderator: William N. Levine, MD, New York, NY
John M. Flynn, MD, San Juan, PR
Kristy L. Weber, MD, Philadelphia, PA
This course provides orthopaedic surgeons with tips to endeavor toward a life of teaching, mentoring, and lifelong learning.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Wednesday Educational Programs

**CAREER DEVELOPMENT**

**8:00 AM - 9:00 AM**

**Room 4505**

**CD7**  What You Need to Know About Workplace Harassment

*Moderator: Joyce Oliner, Baltimore, MD*

Will discuss the risks associated with certain behaviors at work, the legal framework of harassment cases, the behaviors that must be avoided in the workplace as well as those that could lead to potential misunderstandings.

**SHOWDOWNS®**

**8:00 AM - 9:00 AM**

**Room 3401**

**SD1**  Debates, Dilemmas, and Controversies in Total Hip Arthroplasty

*Moderator: Adolph V. Lombardi, Jr., MD, New Albany, OH Robert L. Barrack, MD, St. Louis, MO Keith R. Berend, MD, New Albany, OH C. Anderson Engh, MD, Alexandria, VA Donald S. Garbuz, MD, MHScc, Vancouver, BC, Canada Kevin L. Garvin, MD, Omaha, NE Joshua J. Jacobs, MD, Chicago, IL Jay R. Lieberman, MD, Los Angeles, CA William J. Maloney, MD, Redwood City, CA*

Despite the undisputed success of total hip arthroplasty, the ideal method to accomplish the procedure continues to generate debate among surgeons.

**SYMPOSIA**

**8:00 AM - 10:00 AM**

**Palazzo Ballroom L**

**D**  Surgery 9-1-1: When Things Go Bad for Good Surgeons in the Operating Room

*Moderator: David S. Jevsevar, MD, MBA, Grantham, NH*

Identify and characterize stressful intraoperative complication scenarios, focusing on recognition and immediate treatment strategies to improve outcome, as well as postoperative documentation and communication.

1. Iatrogenic Shoulder Arthroplasty Fractures: What Next?
   *John-Erik Bell, MD, Hanover, NH*

2. Knee Implants Are In,…But There’s a Problem
   *Yale Fillingham, MD, Hanover, NH*

3. I Can’t Get the Fracture Reduced, Now What?
   *Ida L. Gitajn, MD, Hanover, NH*

4. A Vascular Surgeon in the Ortho OR? The Last Person You Want to See…Until You Need One
   *Philip P. Goodney, MD, Lebanon, NH*

5. Unexpected Tumors: That Tissue Doesn’t Look Right, What Do I Do Now?
   *Eric R. Henderson, MD, Lebanon, NH*

6. Hip Arthroplasty: The Cup Went too Medial, the Posterior Column Broke, I Can’t get Stability
   *Wayne E. Moschetti, MD, MS, Lebanon, NH*

   *Michael B. Sparks, MD, Lebanon, NH*

**Room 4303**

**E**  A Step-by-Step Guide to Successful Operative Treatment of Common Fractures in Children: Indications, How to Set Up the Room, Position the Patient, and Do the Procedure

*Moderator: Pooya Hosseinzadeh, MD, St. Louis, MO*


1. Operative Fixation of Medial Epicondyle Fractures
   *Donald S. Bae, MD, Boston, MA*

2. Rigid Nailing of a Length Unstable Femur Fracture
   *Keith D. Baldwin, MD, Philadelphia, PA*

3. Flexible Nailing a Forearm Fracture
   *Gregory A. Mencio, MD, Nashville, TN*

4. Operative Treatment of Ankle Fractures in Children
   *Todd A. Milbrandt, MD, Rochester, MN*

5. Closed Reduction and Pinning a Supracondylar Humerus Fracture
   *David L. Skaggs, MD, Los Angeles, CA*

6. Open Reduction of a Humerus Lateral Condyle Fracture
   *Jennifer M. Weiss, MD, Los Angeles, CA*

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
**Room 4401**


*Moderator: Brian J. Cole, MD, MBA, Chicago, IL*

The goal of this symposium is to provide a comprehensive overview of the current understanding of shoulder instability, including surgical decision-making, techniques, and outcomes, with an evidence-based approach focusing on the cost-effectiveness and value of all available approaches.

I. **How – How do We Manage This: Open Stabilization is The Way to Go**
   Robert A. Arciero, MD, Farmington, CT

II. **Who – Epidemiology of Shoulder Instability/How Do We Manage This: Allograft Reconstruction is The Way to Go**
    Rachel M. Frank, MD, Boulder, CO

III. **How – How Do We Manage This: Arthroscopic Stabilization is The Way to Go**
    Eric C. McCarty, MD, Boulder, CO

IV. **What Happens When Surgery Fails?**
    Matthew T. Provencer, MD CAPT MC USNR, Vail, CO

V. **How Do We Manage This: Laterjet is The Way to Go**
    Anthony A. Romeo, MD, New York, NY

VI. **What - Defining the Anatomy, Especially “Subcritical” Bone Loss**
    John M. Tokish, MD, Scottsdale, AZ

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**INSTRUCTIONAL COURSE LECTURES**

**8:00 AM - 10:00 AM**

**201** Indications and Technique for Single-Stage Revision Total Hip Arthroplasty for Prosthetic Joint Infection
* Moderator: William A. Jiranek, MD, Durham, NC  
  Craig J. Della Valle, MD, Chicago, IL  
  Thomas K. Fehring, MD, Charlotte, NC  
  Fares S. Haddad, FRCS, London, United Kingdom

The evidence supporting single-stage revision for treatment of prosthetic joint infection (PJI) is increasing, and it is apparent the cost and morbidity is less.

**202** Periprosthetic Joint Infection of the Knee: Contemporary Diagnosis and Management
* Moderator: Bryan D. Springer, MD, Charlotte, NC  
  Michael P. Bolognesi, MD, Durham, NC  
  Denis Nam, MD, MSc, Chicago, IL  
  Javad Parvizi, MD, FRCS, Philadelphia, PA

This ICL will provide the latest information on diagnosing and treating acute and chronic periprosthetic knee infections through an interactive case-based approach.

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**203** Chronic Achilles Ruptures: From Bracing to Complex Reconstruction
* Moderator: Daniel C. Farber, MD, Philadelphia, PA  
  Samuel B. Adams, MD, Durham, NC  
  Scott Ellis, MD, New York, NY  
  Phinit Phisitkul, MD, Sioux City, IA

Chronic Achilles ruptures are a reconstructive challenge. Faculty reviews clinical scenarios and provides multiple treatment options and the pros/cons of reconstruction techniques.

**204** Women in Orthopaedics: How Understanding Implicit Bias Can Help Your Practice
* Moderator: Mary K. Mulcahey, MD, New Orleans, LA  
  Ann E. Van Heest, MD, Minneapolis, MN  
  Kristy L. Weber, MD, Philadelphia, PA

The current state of women in orthopaedics, the role of implicit bias, and the value of female partners will be discussed.

**205** Contemporary Questions and Controversies Regarding the Assessment and Management of Distal Radius Fractures: What is the Best Evidence in 2019?
* Moderator: Jesse B. Jupiter, MD, Boston, MA  
  Charles Cassidy, MD, Natick, MA  
  Duretti Fufa, MD, New York, NY  
  Ruby Grewal, MD, London, ON, Canada

This course will offer the best evidence on treatment of fractures in the older patient, alternative treatment options, avoidance of tendon rupture, and deformity.

**206** High Yield Review for the Pediatric Orthopaedic Surgery Maintenance of Certification Exam
* Moderator: Eric D. Shirley, MD, Cartersville, GA  
  Mark Erickson, MD, Aurora, CO  
  John J. Grayhack, MD, Chicago, IL

This ICL reviews the format of the first ABOS Maintenance of Certification exam in Pediatric Orthopaedics and highlights the topics likely to be tested.

**207** Maximizing Your Reimbursement
* Moderator: R. Dale Blasier, MD, Little Rock, AR  
  M. Bradford Henley, MD, MBA, Seattle, WA  
  Adam Levin, MD, Baltimore, MD  
  Louis Stryker, MD, Grand Junction, CO

Important guidance and updates to coding & reimbursement issues for physicians by physicians actively involved in the process.
The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

**Elbow Arthroplasty: Lessons Learned from the Past and Directions for the Future**

*Moderator: Mark E. Morrey, MD, Rochester, MN*

Shawn W. O’Driscoll, MD, Rochester, MN
Scott P. Steinmann, MD, Rochester, MN

This course reviews current standards on elbow arthroplasty including patient selection, exposure, implant selection, surgical technique, and postoperative management; and provides an evidence-based approach to current literature on elbow arthroplasty. Present and future improvements in implant design and surgical technique are discussed as well.

**Arthroscopic Rotator Cuff Repair: A General Instructional Course Lecture**

*Moderator: Michael T. Freehill, MD, Ann Arbor, MI*

Grant E. Garrigues, MD, Durham, NC
Albert Lin, MD, Pittsburgh, PA
Umasathan Srikumaran, MD, MBA, Ellicott City, MD

This ICL will cover treatment principles of arthroscopic RCR. Current evidence based rationale will be discussed, and various constructs, techniques, and instrumentation will be emphasized.

**Modern Techniques in the Treatment of Patients with Metastatic Spine Disease**

*Moderator: Peter S. Rose, MD, Rochester, MN*

Matthew W. Colman, MD, Chicago, IL
Marco Ferrone, MD, FRCSC, Boston, MA
Joshua C. Patt, MD, Charlotte, NC

This course focuses on which patients with spinal metastatic disease may benefit from surgery vs. radiation therapy. In addition, advanced spine surgical techniques are presented.


*Moderator: Afshin Razi, MD, Great Neck, NY*

Charla R. Fischer, MD, New York, NY
Alan S. Hillbrand, MBA, MD, Philadelphia, PA
Kristen E. Radcliff, MD, Egg Harbor Township, NJ

This course offers a concise review of the diagnosis, management, and treatment of common adult lumbar spine disorders seen in general orthopaedic office. The faculty discusses the best practices for evaluation including diagnostic tests for these disorders, as well as conservative treatment options including pharmaceutical and rehabilitation modalities. This course provides evidence-based guidelines for evaluation and nonoperative treatment options. Additionally, the general orthopaedic surgeon gains knowledge on the current surgical indications and procedures using up-to-date best practices in 2018, to aid in counseling patients.

**Mini-Review of Sports Medicine Upper Extremity**

*Moderator: Aravind Athiviraham, MD, FRCSC, Chicago, IL*

Bradley J. Dunlap, MD, Evanston, IL
Mark S. Schickendanz, MD, Cleveland, OH
Jennifer M. Wolf, MD, Chicago, IL

This course is a mini-review of upper extremity sports medicine. Learn high-yield current concepts from leading experts to help take care of your athletes, in clinic and on the sidelines.

**Patellar Instability and Dislocation: Optimizing Surgical Treatment and How to Avoid Complications**

*Moderator: Sabrina Strickland, MD, New York, NY*

Elizabeth A. Arendt, MD, Minneapolis, MN
David Dejour, MD, Lyon, France
Andreas H. Gomoll, MD, New York, NY

This ICL is designed to improve orthopaedic surgeon’s management of patellar instability. Focus is on decision making and surgical technique of medial patellofemoral ligament reconstruction, osteotomy, and trochleoplasty.

**Forearm Fractures: Diagnosis and Contemporary Treatment Strategies**

*Moderator: Peter Tang, MD, Sewickley, PA*

Raymond A. Pensy, MD, Brinklow, MD
Saqib Rehman, MD, Moorestown, NJ

Forearm fractures are common injuries often requiring surgical management. The ICL will focus on reviewing accurate diagnosis, efficient surgical management, and avoiding complications.

**Management of Pelvic Fractures**

*Moderator: Conor P. Kleweno, MD, Seattle, WA*

Milton L. Routt, MD, Houston, TX
Marcus F. Sciadini, MD, Baltimore, MD
John A. Scolaro, MD, Orange, CA

Current standards of pelvic ring injury evaluation, acute management, decision making, surgical techniques, and complication avoidance are presented in depth.

**A Case-Based Approach to High Risk Total Hip Arthroplasty – When Do I Do Something Differently?**

*Moderator: Douglas E. Padgett, MD, New York, NY*

Douglas A. Dennis, MD, Denver, CO
Lawrence D. Dorr, MD, Pasadena, CA
James I. Huddleston, MD, Redwood City, CA
Jean Yves Lazennec, MD, Paris, France
Arthur L. Malkani, MD, Louisville, KY
David J. Mayman, MD, New York, NY
Wayne G. Paprosky, MD, Winfield, IL
Ran Schwarzkopf, MD, New York, NY
Andrew J. Shimmin, MD, Windsor, Australia
Jonathan M. Vigdorchik, MD, New York, NY

Highlight the spectrum of high-risk for instability cases in total hip replacement and how to decrease that risk.

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Management of Most Common Foot and Ankle Pathologies

Moderator: Ashish Shah, MD, Birmingham, AL
Jason S. Ahuero, MD, Houston, TX
Judith F. Baumhauer, MD, MPH, Rochester, NY
Stephen F. Conti, MD, Pittsburgh, PA
Christopher W. DiGiovanni, MD, Waltham, MA
John E. Femino, MD, Iowa City, IA
Naren G. Gurbani, MD, FACS, Capistrano Beach, CA
Kenneth Hunt, MD, Aurora, CO
Jeffrey E. Johnson, MD, St. Louis, MO
Mark S. Myerson, MD, Baltimore, MD
Vinod K. Panchbhavi, MD, FACS, Galveston, TX
Keith L. Wapner, MD, Philadelphia, PA

Course presenters discuss the fundamentals of conservative and surgical management of most common foot and ankle pathologies like acute achilles rupture, plantar fasciitis, equinus contracture [gastrocnemius tightness], sesamoiditis, and metatarsalgia; and also helps participants to understand the different controversies in treatment of these common pathologies by active discussion with the faculty.

PAPER PRESENTATIONS 256-270

8:00 AM - 10:00 AM
Palazzo Ballroom E

Adult Reconstruction Knee IV (256-270): Infection in Total Knee Arthroplasty II
Moderators: Sumon Nandi, MD, Ottawa Hills, OH and Carlos A. Higuera Rueda, MD, Weston, FL

8:00 AM
Perioperative Zoledronic Acid Increases Bacterial Burden in a Validated Model of Implant Infection
Zachary Burke, MD, Venice, CA
Gideon W. Blumstein, MD, Los Angeles, CA
Kelbyn Hori, BS, San Francisco, CA
Cristina Villalpando, Hawthorne, CA
Brian Zukotynski, Manhattan Beach, CA
Sam I. Uweh, BS, Los Angeles, CA
Alexandra Stavrakis, MD, Calabasas, CA
Nicholas M. Bernthal, MD, Santa Monica, CA

Perioperative zoledronic acid significantly increases bacterial burden in a validated mouse model of PJI.

8:06 AM
Next Generation Sequencing for the Diagnosis of Periprosthetic Knee Infection: A Multicenter Investigation
Karan Goswami, MD, Philadelphia, PA
Majd Tarabichi, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Douglas A. Dennis, MD, Denver, CO
Brian A. Klatt, MD, Wexford, PA
Nitin Goyal, MD, Chicago, IL
Eric L. Smith, MD, Boston, MA
Christopher E. Pelt, MD, Salt Lake City, UT
Arthur L. Malkani, MD, Louisville, KY
Brian Palumbo, MD, Tampa, FL
Jon E. Minter, DO, Alpharetta, GA
David Sing, MD, Boston, MA
Michael B. Cross, MD, New York, NY
Hernan Prieto, MD, Gainesville, FL
Carlos A. Higuera Rueda, MD, Weston, FL
D. Craig J. Della Valle, MD, Chicago, IL
Javad Parvizi, MD, FRCS, Philadelphia, PA

Next Generation Sequencing PJICollaborative

Prospective multi-center investigation examining the utility of next generation sequencing for the diagnosis of PJI.

8:12 AM
Perioperative Antibiotic Prophylaxis in Total Joint Arthroplasty: A Single Dose is as Effective as Multiple Doses
Timothy Tan, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Alexander Rondon, MD, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Sean P. Ryan, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study compared the efficacy of single-dose prophylactic antibiotics versus multiple doses of antibiotics in prevention of periprosthetic joint infection (PJI) in patients undergoing TJA.

8:24 AM
Do All Patients Undergo Reimplantation after Resection Arthroplasty of an Infected Knee and Hip?
Qiaojie Wang, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Jorge Manrique, MD, Bogota, Colombia
Timothy Tan, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study investigated patients who underwent resection arthroplasty for PJI and did not receive the intended reimplantation.
8:30 AM  PAPER 260
Sources of Contamination in the Operating Room: A Fluorescent Particle Powder Study
Holt S. Cutler, MD, Dallas, TX
Jose A. Romero, MD, Dallas, TX
David Minor, MD, Columbus, OH
Michael H. Huo, MD, Dallas, TX

A fluorescent particle study demonstrates that forced-air warming devices and OR light movement are potential sources of sterile field contamination. Proper operation of these devices is critical.

8:36 AM  PAPER 261
Prior Hip or Knee Periprosthetic Joint Infection (PJI) in Another Joint Increases Risk of PJI after Primary Total Knee Arthroplasty by Three Fold: A Matched Control Study
Brian Chalmers, MD, Rochester, MN
John Weston, MD, Rochester, MN
Douglas R. Osmon, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

Patients with a history of a THA or TKA PJI in another joint undergoing a clean primary TKA have a 3.3-fold higher risk of PJI when compared to matched controls.

9:00 AM  PAPER 264
Assessing the Role of Daptomycin as Antibiotic Therapy for Staphylococcal Prosthetic Joint Infection
Andy Miller, MD, New York, NY
Celeste Russell, MPH, New York, NY
Allina A. Nocon, MPH, New York, NY
Geoffrey H. Westrich, MD, New York, NY
Barry D. Brause, MD, New York, NY
Michael Henry, MD, New York, NY

We reviewed our experience with daptomycin in the treatment of staphylococcal PJI.

9:00 PM  PAPER 265
Synthetic Networking of Low-Cost Polymeric Implant Coating Allows Sustained Release and Prevents Infection In Vivo
Zachary Burke, MD, Venice, CA
Weixian Xi, PhD, Pasadena, CA
Nicholas M. Berntthal, MD, Santa Monica, CA

This coating presents a highly effective, practical option for prevention of orthopaedic implant infection.

9:24 AM  PAPER 267
The Routine Use of Antibiotic-Laden Bone Cement in Primary Total Knee Arthroplasty Does Not Reduce Infection Risk and is Not Cost-Effective in Non-Diabetic Patients
Robert S. Namba, MD, Corona Del Mar, CA
Matthew P. Kelly, MD, Harbor City, CA
Adrian D. Hinman, MD, San Leandro, CA
Ronald W. Wyatt, MD, Walnut Creek, CA
Liz Paxton, MA, Rcho Santa Fe, CA
Eric L. Cain, MD, Oakland, CA
Guy Cafri, PhD, San Diego, CA

The routine use of antibiotic bone cement does not reduce TKA infection risk and is not cost effective in non-diabetic patients.

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The Effect of Antibiotic-Loaded Bone Cement on Risk of Revision for Infection Following Primary Cemented Total Knee Replacements: An Analysis of 731,214 Cases Using National Joint Registry Data

Simon Jameson, Stockton-on-Tees, United Kingdom
Asaad M. Asaad, MD, MSc, Stockton On Tees, United Kingdom
Adetayo Kasim, Durham, United Kingdom
Theophile Bigirimurame, PhD, Newcastle, United Kingdom
Paul Baker, MB, ChB, Stockton On Tees, United Kingdom
James Mason, PhD, Coventry, United Kingdom
Paul F. Partington, MD, Corbridge, United Kingdom
Mike R. Reed, MBBS MD, Northumberland, United Kingdom

The use of antibiotic-loaded bone cement in primary total knee arthroplasty was associated with a lower risk of revision, including both aseptic revision and revision for infection.

Development and Validation of an Evidence-Based Algorithm for Diagnosing Periprosthetic Joint Infection

Noam Shohat, MD, Petach Tikva, Israel
Timothy Tan, MD, Philadelphia, PA
Craig J. Della Valle, MD, Chicago, IL
Tyler E. Calkins, BS, Morgantown, WV
Jaiben George, Cleveland, OH
Carlos A. Higuera Rueda, MD, Weston, FL
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study offers an evidence-based algorithm for diagnosing PJI which has shown excellent performance on formal external validation.

Albumin Outperforms ASA Score for Predicting Several Postoperative Complications Following Total Joint Arthroplasty

Sean P. Ryan, MD, Durham, NC
Cary S. Politzer, BS, Durham, NC
William A. Jiranek, MD, Durham, NC
Samuel S. Wellman, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

This is a retrospective review of primary total knee and total hip arthroplasty patients, comparing 30-day outcomes based on albumin vs. ASA score.

8:06 AM  PAPER 272
No Difference in Clinical Outcomes Between Supra-Pectoral Arthroscopic Biceps Tenodesis and Lateral Row Biceps Tenodesis During Simultaneous Rotator Cuff Repair

Jonathan C. Levy, MD, Fort Lauderdale, FL
Shanell Disla, BS, Fort Lauderdale, FL
Derek Berglund, MD, Fort Lauderdale, FL
Jennifer Kurowicki, MD, Jersey City, NJ
Samuel Rosas, MD, Winston-Salem, NC

Simultaneous arthroscopic rotator cuff repair and biceps tenodesis using supra-pectoral suture anchor technique and lateral-row tenodesis technique are equivalent.

An Algorithm for Managing Long Head of Biceps Pathology During Rotator Cuff Repair

Anthony Maher, Auckland, New Zealand
Warren B. Leigh, MD, Auckland, New Zealand
Matthew Brick, MD, Auckland, New Zealand
Simon Young, MD, FRACS, Auckland, New Zealand
Michael Caughey, Auckland, New Zealand

This paper presents the long head of biceps findings from a large cohort of rotator cuff repairs, and suggests a surgical algorithm for surgical management of long head of biceps lesions.

8:24 AM  PAPER 274
Coracoid Morphology is Not Associated with Subscapularis Tears

Viktor C. Tollemar, BS, Highland Park, IL
Lewis L. Shi, MD, Chicago, IL
Michael J. Lee, MD, Chicago, IL
Jason L. Koh, MD, Winnetka, IL

There was no association between coracoid morphology and presence of subscapularis tears.
Subscapularis Tears on MRI: Are Radiologists and Orthopaedic Surgeons Seeing the Same Thing?

John G. Horneff, MD, Philadelphia, PA
Tej Joshi, Roslyn, NY
Ryan M. Cox, MD, Philadelphia, PA
Daniel E. Davis, MD, Wallingford, PA
Surena Namdari, MD, MSc, Philadelphia, PA
Joseph A. Abboud, MD, Philadelphia, PA
Matthew L. Ramsey, MD, Philadelphia, PA

Subscapularis tears are difficult to identify on MRI but orthopaedic surgeons can often be more adept at identifying such tears and should not rely on radiologist interpretation alone.

Factors Associated with Atraumatic Posterosuperior Rotator Cuff Tears

Hyung B. Park, MD, Changwon, Republic of Korea
Ji-Yong Gwark, Changwon, Republic of Korea
Byung Hoon Kwack, MD, Changwon, Republic of Korea

The metabolic factors of diabetes, BMI, hypo-HDLemia, and metabolic syndrome were significant independent factors associated with the development of posterosuperior rotator cuff tears.

Prediction of the Irreparability of Rotator Cuff Tears

In-Bo Kim, MD, Busan, Republic of Korea
Dong-Wook Jung, MD, Busan, Republic of Korea

Irreparability of rotator cuff tears is affected by chronic pseudoparalysis, tear size, acromiohumeral distance, tangent sign, fatty infiltration of supraspinatus, and tendon involvement.

The Learning Curve of Superior Capsule Reconstructions

Jarret M. Woodmass, MD, Calgary, AB, Canada
Eric R. Wagner, MD, Atlanta, GA
Kyle Borque, MD, Boston, MA
Michelle J. Chang, BS, Boston, MA
Kathryn M. Welp, Cambridge, MA
Laurence D. Higgins, MD, Brookline, MA
Jon J. Warner, MD, Boston, MA

Superior capsule reconstruction performed for large to massive rotator cuff tears has a high rate of persistent pain and limited function leading to clinical failure in 65% (n= 22/34) of patients.

Superior Capsular Reconstruction: Radiographic and Clinical Outcomes at Mean One-Year Follow Up

Abigail L. Campbell, MD, New York, NY
Hien Pham, MD, New York, NY
Soterios Gyftopoulos, MD, Long Is City, NY
Nicholas Ramos, MD, New York, NY
Robert J. Meislin, MD, New York, NY

Twenty patients after superior capsular reconstruction have improved outcomes and radiographic parameters at mean 1 year follow up.

Arthroscopic Repair of Isolated Subscapularis Tear: Single-Row Versus Double-Row Suture-Bridge Technique

Sung-Jae Kim, MD, Seoul, Republic of Korea
Yun-Rak Choi, MD, PhD, Seoul, Republic of Korea
Min Jung, MD, Seoul, Republic of Korea
Jisang E. Yoon, Seoul, Republic of Korea

If torn subscapularis is of good quality, arthroscopic repair of isolated subscapularis tear using either single-row or suture-bridge yielded satisfactory outcomes with no significant differences.

Arthroscopic Repair of Isolated Subscapularis Tears: Clinical Outcome and Structural Integrity with a Minimum Follow Up of 4.6 Years

Anita Hasler, Zürich, Switzerland
Geln Boyce, MD, Melbourne, Australia
Alex Schallberger, MD, Unterseen, Switzerland
Bernhard Jost, MD, St. Gallen, Switzerland
Sabrina Catanzaro, RN, Zurich, Switzerland
Christian Gerber, MD, Zurich, Switzerland

Arthroscopic repair of isolated subscapularis tears yields good to excellent clinical results and a high healing rate with durable structural integrity at mid-term follow up.

Subacromial Spacer as a Biomechanical Augmentation for Partial Repair of Rotator Cuff Tear: Clinical and Radiological Outcomes

Paolo Paladini, MD, Cattolica, Italy
Antonio Padolino, MD, Anzio, Italy
Giovanni Merolla, MD, Cattolica, Italy
Giuseppe Porcellini, MD, Modena, Italy
Francesco Fauci, Cattolica, Italy

Subacromial spacer as a biomechanical augmentation for partial rotator cuff repair: clinical and radiological outcomes.
9:36 AM  
**PAPER 283**
Corticosteroid Injections within Three Months of Rotator Cuff Repair are Associated with Increased Revision Surgery at Two Years  
**William W. Schairer, MD, New York, NY**  
Shawn S. Richardson, MD, New York, NY  
Russell F. Warren, MD, New York, NY  
Matthew T. Provencher, MD CAPT MC USNR, Vail, CO

This study demonstrates that corticosteroid injections within three months before rotator cuff repair are associated with significantly increased risk of failure at 2 years postoperatively.

9:42 AM  
**PAPER 284**
Effect of Biceps Tenodesis on Speed of Recovery After Arthroscopic Rotator Cuff Repair  
**Jonathan C. Levy, MD, Fort Lauderdale, FL**  
Jennifer Kurowicki, MD, Jersey City, NJ  
Derek Berglund, MD, Fort Lauderdale, FL  
Samuel Rosas, MD, Winston-Salem, NC  
Emmanuel McNeely, MS, Boca Raton, FL  
Matthew Motisi, DO, Fort Lauderdale, FL  
M. R. Giveans, PhD, Eden Prairie, MN  
Dragomir Mijic, DO, Madison Heights, MI

Biceps tenodesis in the setting of rotator cuff repair does not influence the speed of recovery, however pain and motion recovery plateau earlier than rotator cuff repair without biceps tenodesis.

9:48 AM  
**PAPER 285**
Prospective Sensor Controlled Compliance Analysis of the Shoulder Abduction Brace after Rotator Cuff Repair  
**Florian Grubhofer, Zurich, Switzerland**  
Christian Gerber, MD, Zurich, Switzerland  
Dominik C. Meyer, MD, Zurich, Switzerland  
Karl Wieser, MD, Zurich, Switzerland  
Samy Bouaicha, MD, Zurich, Switzerland

The postoperative rehabilitation in an abduction brace after rotator cuff repair is commonly used. This study shows that the wearing compliance is lower than 50% of the demanded wearing time.

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**PAPER PRESENTATIONS 286-300**

8:00 AM - 10:00 AM  
Room 2102

**Trauma III (286-300): Foot/Ankle**  
Moderators: Jan P. Szatkowski, MD, Indianapolis, IN and Stuart T. Guthrie, MD, Detroit, MI

8:00 AM  
**PAPER 286**
Does Intraoperative Multidimensional Fluoroscopy Lead to Syndesmotic Reduction Changes Compared to Conventional Fluoroscopy?  
**Bryce A. Cunningham, MD, Hixson, TN**  
Marschall B. Berkes, MD, Houston, TX  
Stephen J. Warner, MD, PhD, Houston, TX  
John W. Munz, MD, Houston, TX  
Timothy S. Achor, MD, Bellaire, TX  
Andrew M. Choo, MD, Houston, TX  
Milton L. Routt, MD, Houston, TX  
Joshua L. Gary, MD, Houston, TX

Intraoperative multidimensional fluoroscopy provides information to the surgeon which frequently leads the surgeon to change the reduction of the syndesmosis, resulting in a low malreduction rate.

8:06 AM  
**PAPER 287**
An Accuracy of Syndesmotic Reduction by Direct Visualization Technique: Evaluated by Simultaneously Bilateral Postoperative Computed Tomography  
**Chamnanni Rungprai, MD, Bangkok, Thailand**  
Yantarat Sripanich, MD, Bangkok, Thailand

A transsyndesmotic screw fixation using direct visualization technique demonstrate low rate of syndesmotic malreduction as shown by simultaneously bilateral postoperative CT scan and significant improvement of functional outcomes as measured with FAAM, SF-36, and VAS. This technique is effective, safe, and feasible for treatment in patients with acute ankle fracture with syndesmotic injury.

8:12 AM  
**PAPER 288**
Posterior Malleolar Fracture Morphology: Ankle Fractures vs. Combined Tibial Shaft/Ankle Fractures  
**Lucas S. Marchand, MD, Salt Lake City, UT**  
Patrick Kellam, MD, Salt Lake City, UT  
Justin Haller, MD, Salt Lake City, UT  
David L. Rothberg, MD, Salt Lake City, UT  
Thomas F. Higgins, MD, Salt Lake City, UT

Posterior malleolar fracture morphology varies significantly between tibial shaft fracture with intra-articular injury and rotational ankle injuries.

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Discussion
Wednesday Educational Programs

8:24 AM PAPER 289
Outcomes After Heel Pad Degloving Injuries
Andrew Chen, MD, MPH, Charlotte, NC
Lisa Reider, PhD, Baltimore, MD
Jason Luly, MS, Baltimore, MD
Daniel O. Scharfstein, Baltimore, MD
Joshua L. Gary, MD, Houston, TX
Wade T. Gordon, MD, Ashland, OR
Saam Morshed, MD, San Francisco, CA
Eben A. Carroll, MD, Winston-Salem, NC
Reza Firoozabadi, MD, Seattle, WA
Clifford B. Jones, MD, FACS, Phoenix, AZ
Lisa Reider, PhD, Baltimore, MD
Jason Luly, MS, Baltimore, MD
Michael J. Bosse, MD, Charlotte, NC
Ellen Mackenzie, Baltimore, MD
METRC

For heel degloving injuries that require flap coverage, patient reported outcomes may be improved with amputation.

8:30 AM PAPER 290
Open Ankle Fractures are Not Benign
Natasha Simske, BS, Madison, WI
Heather A. Vallier, MD, Cleveland, OH
Chang-Yeon Kim, MD, Cleveland, OH
Megan Audet, BA, Cleveland, OH

Open fractures are more complex than closed fractures and develop complications 2.5 times more often. Higher age and BMI and other comorbidities may be contributory.

8:36 AM PAPER 291
Greater Articular Inflammatory Response in Tibial Plafond Fractures as Compared to Ankle Fractures
Lucas S. Marchand, MD, Salt Lake City, UT
David L. Rothberg, MD, Salt Lake City, UT
Thomas F. Higgins, MD, Salt Lake City, UT
Justin Haller, MD, Salt Lake City, UT

The intra-articular inflammatory response of tibial plafond fractures is greater than that of rotational ankle fractures supporting the importance of this process in the potential development of PTOA.

8:48 AM PAPER 292
Healthcare Disparities in Orthopaedic Trauma: Minority Patients are Less Likely to Receive Operative Fixation of Calcaneus Fractures
Boris A. Zelle, MD, San Antonio, TX
Nicolas A. Morton-Gonzaba, BS, San Antonio, TX
Christopher F. Adcock, BA, BS, San Antonio, TX
John V. Lacci, BA, San Antonio, TX
Khang H. Dang, MD, San Antonio, TX
Ali Seifi, MPH, MPT, San Antonio, TX

Using the National Inpatient Sample (NIS) dataset, we showed significant racial and social disparities regarding healthcare utilization of operative fixation of calcaneus fractures.

8:54 AM PAPER 293
The Effect of the Strengthen Opioid Misuse Prevention Act on Opiate Prescription Practices after Ankle Fracture Surgical Fixation
Syed H. Hussaini, MD, Winston-Salem, NC
Kevin Wang, BA, Irvine, CA
Aaron T. Scott, MD, Winston-Salem, NC

This study examines the effect that legislation targeting narcotic use has on postoperative prescription practices and pain control after ankle fracture surgical fixation.

9:00 AM PAPER 294
Risk Factors for Long-Term Opioid Use after Ankle Fracture Surgery: A Cox-Regression Analysis and Prospective Follow Up
Chang-Yeon Kim, MD, Cleveland, OH
Richard C. Lee, BA, Cleveland, OH
Anne Drake, BA, Cleveland, OH
Lakshmanan Sivasundaram, MD, Cleveland, OH
Jonathan Copp, MD, Cleveland, OH
Heather A. Vallier, MD, Cleveland, OH

Prolonged opioid use after ankle fracture surgery was independently associated with worse long-term functional outcomes.

9:12 AM PAPER 295
What are the Risk Factors for Deep Infection in 43C Tibial Pilon Fractures?
Robert M. Hulick, MD, Jackson, MS
John M. Weldy, Jackson, MS
Katie Howell, Madison, MS
Matthew L. Graves, MD, Jackson
Patrick F. Bergin, MD, Madison, MS
Clay A. Spitler, MD, Madison, MS

Medial or anterior open fracture wound, segmental bone loss, need for flap coverage, and placement of fixation thru an open fracture wound increase the risk of deep infection in 43C pilon fractures.

9:18 AM PAPER 296
Predicting Unplanned Return to the Operating Room After Fixation of Tibial Pilon Fractures
Matthew Hogue, Iowa City, IA
Rohan Gopinath, MD, Baltimore, MD
Rohan Gopinath, MD, Baltimore, MD
Ugo Udogwu, BA, New York, NY
Dimitrius P. Marinos, BS, Baltimore, MD
Isaac Markenley, Lauderdale Lakes, FL
John Morelliato, MBBS, Columbia, MD
Anthony R. Carlino, MS, Baltimore, MD
Renan C. Castillo, MD, Baltimore, MD
Robert V. O’Toole, MD, Lutherville, MD

Unplanned return to the operating room after ORIF of a tibial pilon fracture remains prevalent, even for surgeons that commonly treat these complex injuries using modern techniques.

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Wednesday Educational Programs

9:24 AM  PAPER 297

Does Sagittal Plane Alignment and Surgical Approach Affect Pilon Fracture Outcomes?

Brett D Crist, MD, Columbia, MO
Trevor R. Gulbrandsen, MD, North Liberty, IA
Robert M. Hulick, MD, Jackson, MS
Clay A. Spitler, MD, Madison, MS

The sagittal plane alignment does not appear to be effected by the surgical approach. Therefore, the surgical approach to pilon fractures should be based on the fracture pattern.

9:36 AM  PAPER 298

Incidence of Ankle Fusion after Pilon Fracture

Lauren Massey, Columbia, MO
Lasun O. Oladeji, MD, MS, Columbia, MO
James L. Cook, DVM, PhD, Columbia, MO
Gregory J. Della Rocca, MD, PhD, Columbia, MO
Brett D Crist, MD, Columbia, MO

This study sought to characterize patient and injury related variables associated with arthrodesis in patients with operatively treated (ORIF) pilon fractures.

9:42 AM  PAPER 299

Pilon Fractures in Elderly Patients: Should We Be Fixing These?

Justin Haller, Salt Lake City, UT
Michael Githens, MD, Seattle, WA
David L. Rothberg, MD, Salt Lake City, UT
Thomas F. Higgins, MD, Salt Lake City, UT
Sean E. Nork, MD, Seattle, WA
David Barei, MD, FRCS(C), Seattle, WA

Age > 60 years is not an independent predictor of surgical treatment failure of pilon fractures as defined by nonunion or arthrosis when compared to a younger cohort.

9:48 AM  PAPER 300

Augmented Reality Technology Helps to Improve Surgical Approach Planning in the Treatment of Severe Intra-articular Fractures of Distal Tibia

Alexandre A. Sitnik, MD, PhD, Minsk, Belarus
Alexandr Beletsky, MD, PhD, Minsk, Belarus
Pavel Arlou, BA, Minsk, Belarus
Pavel Volotovski Minsk, Belarus
Steven R. Schelkun, MD, MS, Coronado, CA

Augmented reality technology helps in preoperative planning and defining surgical approach(-es) in the distal tibia (pilon) fracture.

CAREER DEVELOPMENT

11:00 AM - 12:00 PM

CD8  Hot Marketing Topics to Build Your Practice

Moderator: Bill Champion, Omaha, NE
Room 4505
Tony Edwards, Omaha, NE

Patient expectations regarding access have made a significant change within recent years, which is why orthopaedic practices are opening urgent care and walk-in clinics. Additionally, there has been a fundamental shift in a push for payors to reimburse orthopaedists based on documented value over a volume of procedures. This has a direct impact on how patients utilize rating sites, search engines, and social media. This presentation helps doctors and executives have an understanding of the trends, the data that supports a practice’s strategy, and what to be prepared for in the near future.

THE WAY I SEE IT…® (TWISI)

11:00 AM - 12:00 PM

Room 3401

TWISI2 Artificial Intelligence, Machine Learning, and Big Data

Moderator: Joseph H. Schwab, MD, Boston, MA

I.  Applied Predictive Modeling with Machine Learning / Deep Learning for Orthopaedic Imaging
Aditya V. Karhade, BS, Boston, MA

II.  Machine Learning in Spine Surgery / Emerging Opportunities and Future Directions
Paul T. Ogink, MD, Cambridge, MA

III.  Machine Learning in Orthopaedic Oncology / Predictive Analytics for Orthopaedic Trauma
Quirina Thio, MD, Somerville, MA

Introduction to artificial intelligence, machine learning, and big data in orthopedic surgery and overview of opportunities for direct application to clinical care.
WEDNESDAY EDUCATIONAL PROGRAMS

SYMPOSIUM

11:00 AM - 12:30 PM
Palazzo Ballroom E
◆ G Practical Solutions for Challenging Problems in Total Knee Arthroplasty
Moderator: Paul F. Lachiewicz, MD, Chapel Hill, NC
This didactic and video-based course will help the practicing surgeon plan for and deal with difficult situations before and after primary total knee arthroplasty.

I. The Challenge of TKA After Uni-and Bicompartmental Procedures 8 Minutes
James A. Browne, MD, Charlottesville, VA

II. The Challenge of TKA After Ligament Reconstruction (ACL) and Cartilage Salvage Procedures
William Bugbee, MD, San Diego, CA

III. Liner Exchange is a Reasonable Option for Polyethylene Wear
C. Anderson Engh, MD, Alexandria, VA

IV. My Patient has an Infection at 6 weeks: Remove & Spacer
Thomas K. Fehring, MD, Charlotte, NC

V. My Patient has an Infection at 6 Weeks: Debride the Knee
Fares S. Haddad, FRCS, London, United Kingdom

VI. The MCL is Transected Intra-Operatively: Repair and Brace 6 Minutes
Joshua J. Jacobs, MD, Chicago, IL

VII. Complete Revision is Needed for Polyethylene Wear
David G. Lewallen, MD, Rochester, MN

VIII. My Patient has a Patella Fracture: What Should be Done?
Mark W. Pagnano, MD, Rochester, MN

IX. Knee Arthroplasty After Osteotomies and Plating of Peri-Articular Fractures: Staging and Techniques to Avoid Problems
Vincent D. Pellegrini, MD, Charleston, SC

INSTRUCTIONAL COURSE LECTURES

11:00 AM - 12:30 PM
◆ 221 Update on Infection in Arthroplasty
Moderator: Antonia F. Chen, MD, MBA, Newton, MA
Barry D. Brause, MD, New York, NY
Carl A. Deirmengian, MD, Wynnewood, PA
Brian A. Klett, MD, Wexford, PA
This course is intended to serve as an update in the diagnosis and treatment of Periprosthetic joint infection from members of the MSIS.

◆ 222 The Synovial Joint: Structure, Function, Injury and Repair, Osteoarthritis
Moderator: Joseph A. Buckwalter, MD, Iowa City, IA
Alan J. Grodzinsky, PhD, Cambridge, MA
This course offers a concise review of the current understanding of the biology and biomechanics of articular cartilage and provides a basis for current understanding of osteoarthritis and cartilage repair. A basis for understanding current clinical approaches to providing biologic resurfacing of articular cartilage and restoration of synovial joint function also is covered.

◆ 223 Management of Common Complications of Foot and Ankle Surgery
Moderator: Mark S. Myerson, MD, Baltimore, MD
Anish R. Kadakia, MD, Glenview, IL
Andy P. Molloy, MB, ChB, Liverpool, United Kingdom
Thomas San Giovanni, MD, Coral Gables, FL
This course covers common errors in decision making and surgical reconstruction of the foot and ankle. Techniques for revision surgery, reconstruction, and salvage of these deformities are presented in a case-based approach with an emphasis on video techniques.

◆ 224 Teaching the Teachers: Improving Your Skills as an Orthopaedic Motor Skills Instructor
Moderator: Joseph C. Tauro, MD, Toms River, NJ
Susan Carlson, M.S.Ed., Rosemont, IL
Michael D. Feldman, MD, Covington, LA
Jonathan J. Myer, MD, La Jolla, CA
Gregg T. Nicandi, MD, Rochester, NY
This course focuses on improving the teaching skills of orthopaedic surgeons who participate or wish to participate as instructors in motor skills labs.

◆ 225 Post-Traumatic Arthritis of the Distal Radioulnar Joint: Contemporary Perspectives
Moderator: Jesse B. Jupiter, MD, Boston, MA
Charles Cassidy, MD, Natick, MA
Marco Rizzo, MD, Rochester, MN
Arthritis of the distal radioulnar joint can be disabling. This course will cover in depth the indications, techniques, and outcomes of alternative surgical treatments.

◆ 226 Office Management of Common Pediatric Fractures: Treatment Strategies to Optimize Success
Moderator: Bernard D. Horn, MD, Philadelphia, PA
Martin J. Herman, MD, Philadelphia, PA
Richard W. Kruse, DO, Wilmington, DE
Todd A. Milbrandt, MD, Rochester, MN
Most pediatric fractures are treated without surgery. This course teaches successful nonsurgical treatment of common pediatric fractures with practical, evidence-based advice and techniques.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
As healthcare reform continues to evolve, there will need to be an emphasis on generating value, improving quality, and decreasing cost. As fee for service loses its grip on total joint replacement (TJR) reimbursement, value-based purchasing will become more common place.

**228 Pain Management after Shoulder Surgery – What Works?**

*Moderator: William N. Levine, MD, New York, NY*

*Anthony R. Brown, MBCHB, Mamaroneck, NY*

*Anand M. Murthi, MD, Baltimore, MD*

*Surena Namdari, MD, MSc, Philadelphia, PA*

This course addresses pain management after shoulder surgery and reviews regional nerve blockade, intraoperative soft tissue infiltration, and analgesic medication protocols and their efficacy.

**229 When You’re Running Out of Room: Managing Humeral and Glenoid Bone Loss in Shoulder Arthroplasty**

*Moderator: Thomas R. Duquinn, MD, Buffalo, NY*

*George S. Athwal, MD, London, ON, Canada*

*John W. Sperling, MD, MBA, Rochester, MN*

*Thomas (Quin) W. Throckmorton, MD, Germantown, TN*

This course is designed to help understand and treat bone loss of the glenoid and humerus that is encountered in primary and revision shoulder arthroplasty.

**230 Own Your Patient's Bone Health: Know How to Treat Prior to Spine Surgery**

*Moderators: Paul A. Anderson, MD, Madison, WI and John R. Dimar II, MD, Louisville, KY*

*Joseph M. Lane, MD, New York, NY*

*Ronald A. Lehman, MD, New York, NY*

Metabolic bone disease causes major morbidity in the aging skeleton requiring orthopedists to have improved knowledge of the physiology, diagnosis and currently available treatment regimes.

**231 What to Do When it is Anterior Cruciate Ligament Number Two**

*Moderator: Ashsheh Bedi, MD, Ann Arbor, MI*

*Michael G. Baraga, MD, Coral Gables, FL*

*Alan Getgood, MD, FRCS (Ortho), London, ON, Canada*

*Bryson P. Lesniak, MD, Pittsburgh, PA*

ACL revision is an increasingly common procedure. This course will aid the surgeon to recognize causes of primary ACL failure and how to address them.

**232 Incorporating Biologics into Your Practice: The New Horizon in Sports Medicine**

*Moderator: Richard Iorio, MD, Boston, MA*

*Joseph A. Bosco III, MD, New York, NY*

*Ryan M. Nunley, MD, St. Louis, MO*

*Owen R. O’Neill, MD, Edina, MN*

Lectures, reviews of current research and literature, and audience participation provide attendees with a contemporary understanding of biologics and how to incorporate them into their own practices.

**233 Secrets of Success in the Management of Lower Extremity Nonunions**

*Moderator: John K. Sontich, MD, Chagrin Falls, OH*

*Randall E. Marcus, MD, Cleveland, OH*

*Charalampous Zalavras, MD, Los Angeles, CA*

The balance of stability and biology of lower extremity nonunion treatment will be evaluated to promote speedy healing, early weight-bearing and reduced hardware failure.

**283 The Post “OOP” Knee**

*Moderator: Fred D. Cushner, MD, New York, NY*

*Keith R. Berend, MD, New Albany, OH*

*Henry D. Clarke, MD, Phoenix, AZ*

*Craig J. Dela Valle, MD, Chicago, IL*

*Steven B. Haas, MD, New York, NY*

*Michael A. Kelly, MD, Hackensack, NJ*

*Gwo-Chin Lee, MD, Philadelphia, PA*

*Adolph V. Lombardi, Jr, MD, New Albany, OH*

*David J. Mayman, MD, New York, NY*

*Giles R. Scuderi, MD, New York, NY*

*Alfred J. Tria, MD, Princeton, NJ*

*Geoffrey H. Westrich, MD, New York, NY*

This case-based ICL covers common postoperative complications and focuses on prevention as well as treatment.

**284 Bread and Butter Trauma: Tips, Tricks, and Evidence-Based Updates on Common Fractures**

*Moderator: Kanu M. Okike, MD, Honolulu, HI*

*Timothy S. Achor, MD, Bellaire, TX*

*Julius A. Bishop, MD, Palo Alto, CA*

*Christina Boulton, MD, Tucson, AZ*

*Eben A. Carroll, MD, Winston-Salem, NC*

*Michael J. Gardner, MD, Redwood City, CA*

*Thomas F. Higgins, MD, Salt Lake City, UT*

*John W. Munz, MD, Houston, TX*

*Sean E. Nork, MD, Seattle, WA*

*Marcus Sciadini, MD, Baltimore, MD*

This is a high-yield session providing tips, tricks, and evidence-based updates on fractures commonly seen in general orthopaedic practice, including proximal humerus, distal radius, hip, tibia, and ankle.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
11:00 AM - 12:30 PM
Room 2102

Sports Medicine III (301-309, 711): Miscellaneous
Moderators: Jeffrey A. Macalena, MD, Minneapolis, MN and John D. Kelly, MD, Newtown Square, PA

11:00 AM  PAPER 301
Are Amniotic Fluid Products Stem Cell Therapies? An Analysis of the Composition of Commercial Amniotic Fluid Preparations
Alberto J. Panero, DO, Sacramento, CA
Alan M. Hirahara, MD, Sacramento, CA
Wyatt Andersen, ATC, BS, Sacramento, CA

Amniotic fluid products should not be considered stem cell products; however, they may still represent a practical treatment option for patients due to their concentration of growth factors.

11:06 AM  PAPER 302
Acellular Stem Cell Derivatives for the Treatment of Muscle Injuries: A New Paradigm?
Alex Vaisman, MD, Santiago, Chile
Rodrigo Guiloff, MD, Santiago, Chile
Javier Oyance lópez, Santiago, Chile
David Figueroa, MD, Santiago, Chile
Rafael Calvo, MD, Santiago, Chile
Mrcela P. Gallegos, MD, Santiago, Chile
Paulette Conget, PhD, Santiago, Chile

Local administration of acellular stem cell derivatives favors muscle repair, because it decreases fibrotic tissue and increases the amount of regenerative muscle fibers.

11:12 AM  PAPER 303
History of Prior Surgery Negatively Affects Cell Culture Identity in Patients Undergoing Autologous Chondrocyte Implantation
Jakob Ackermann, Boston, MA
Alexandre B. Mestriner, MD, Sao Paulo, Brazil
Courtney Vanarsdale, PA-C, Chestnut Hill, MA
Andreas H. Gomoll, MD, New York, NY

Cartilage biopsies for ACI from patients with one or multiple previous surgeries resulted in implants with lower identity scores when compared to patients without previous operations.

11:18 AM  PAPER 304
The Effect of Single Sport Specialization in Youth Sports: Does It Increase the Risk of Injury? A Prospective Study
Danielle G. Weekes, MD, Egg Harbor Township, NJ
Fotos P. Tjomakaris, MD, Ocean View, NJ
Meghan Mattson, ATC, Philadelphia, PA
Matthew D. Pepe, MD, Linwood, NJ
Bradford S. Tucker, MD, Ocean City, NJ

The purpose was to determine the prevalence of sport specialization in youth athletes, and prospectively examine whether specialization correlates with an increased incidence of athletic injury.

11:30 AM  PAPER 305
Concussions in Rugby – Reporting, Behaviors, and Time Loss: A National Survey of Rugby Union Players in the United States
Johnathan C. Miller, BA, New York, NY
Beth E. Shubin Stein, MD, New York, NY
David Trofa, MD, New York, NY
Thomas Bottiglieri, DO, Englewood, NJ
Hamish A. Kerr, MD, Latham, NY
Christopher S. Ahmad, MD, New York, NY

Approximately 75% of male and female rugby players with 6-10 years of play experience report a history of concussion, and approximately 50% of those who get a concussion report the injury during play.

11:36 AM  PAPER 306
Return-to-Sport Following the Adolescent Concussion: Epidemiologic Findings from a High School Population
Toufic R. Jildeh, MD, Royal Oak, MI
Kelechi Okoroha, MD, Royal Oak, MI
Eric Denha, Beverly Hills, MI
Christina Eyers, ATC, EdD, Detroit, MI
Ashley P. Johnson, ATC, MS, Detroit, MI
Ramsey Shehab, MD, Dearborn, MI
Vasilios Moutzouros, MD, Northville, MI

Adolescents with previous/ recurrent concussions were found to have delayed return to sport. ImPACT tests involving function decrease with recurrent concussions while tests involving memory increased.

11:42 AM  PAPER 307
Post-Exercise Leg Compartment Pressure Measurements in Asymptomatic Collegiate Distance Runners
Timothy Miller, MD, Granville, OH
Nicholas A. Early, MD, Cincinnati, OH
Christopher C. Kaeding, MD, Columbus, OH

Post-exercise pressure measurements have previously been used to diagnose exertional compartment syndrome when imaging evaluation is negative for other causes. However, elevated leg compartment pressures are prevalent in asymptomatic running athletes despite a lack of symptoms of exertional compartment syndrome. Therefore, chronic exertional compartment syndrome should be diagnosed based on patient symptoms. Post-exercise compartment pressure measurements should be used cautiously as only an indicator of the diagnosis and not as a confirmatory test.
PAPER 308
A Bioactive Scaffold Enhances Articular Cartilage Regeneration after Microfracture in a Rabbit Model
Ting Guo, PhD, College Park, MD
Hannah B. Baker, PhD, Baltimore, MD
Maesha Noshin, Silver Spring, MD
Sean Meredith, MD, Baltimore, MD
Evin Taskoy, ATC, Baltimore, MD
Qinggong Tang, PhD, College Park, MD
R. Frank Henn, MD, Ellicott City, MD
John P. Fisher, PhD, College Park, MD
Jonathan D. Packer, MD, Baltimore, MD

In a rabbit model of cartilage defect, cartilage regeneration after microfracture was improved with the addition of a bioactive scaffold compared to a standard (non-bioactive) scaffold.

PAPER 309
The Impact of a Standardized Multimodal Analgesia Protocol on Opioid Prescriptions after Common Arthroscopic Procedures
Christina Hajewski, MD, North Liberty, IA
Robert W. Westermann, MD, Iowa City, IA
Andrew Holte, BS, Coralville, IA
Alan G. Shamrock, MD, Iowa City, IA
Matthew J. Bollier, MD, Iowa City, IA
Brian R. Wolf, MD, Iowa City, IA

Institution of a standardized multimodal analgesia protocol significantly decreased the amount of opioids dispensed after common arthroscopic procedures and did not result in increased refill demands.

PAPER 711
Long-Term 17-Year Follow Up after Meniscus Repair with Concomitant Anterior Cruciate Ligament Reconstruction in a Pediatric and Adolescent Population
Adam J. Tagliero, MD, Rochester, MN
Vishal Desai, BS, Rochester, MN
Nicholas J. Kennedy, MD, Yakima, WA
Christopher L. Camp, MD, Rochester, MN
Timothy E. Hewett, PhD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Diane L. Dahm, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN

Long-term 17-year follow up after meniscus repair with concomitant anterior cruciate ligament reconstruction in a pediatric and adolescent population.

PAPER 310
Delayed Hospital Discharge after Total Shoulder Arthroplasty: Why, and Who is at Risk?
Mariano Menendez, MD, Boston, MA
Sarah M. Lawler, BA, Waltham, MA
David C. Ring, MD, Austin, TX
Andrew Jawa, MD, Cambridge, MA

Sociodemographic and psychological factors seem to have more influence on prolonged patient stay following total shoulder arthroplasty than patient infirmity and technical issues.

PAPER 311
Can Hospital Satisfaction Predict Functional Outcome after Total Shoulder Arthroplasty?
Robert D. Wojahn, MD, St. Louis, MO
Ken Yamaguchi, MD, St. Louis, MO
Jay D. Keener, MD, St. Louis, MO
Leesa M. Galatz, MD, New York, NY
Alexander W. Aleem, MD, St. Louis, MO
Aaron M. Chamberlain, MD, St. Louis, MO

The HCAHPS score, a measure of hospital satisfaction and a determinant of Medicare quality-based reimbursement, showed no correlation with functional outcome measures at one year after TSA.

PAPER 312
Time-Driven Activity-Based Costing to Identify High-Cost Total Shoulder Arthroplasty Patients
Mariano Menendez, MD, Boston, MA
Sarah M. Lawler, BA, Waltham, MA
Jonathan Shaker, MS, Boston, MA
Nicole W. Bassoff, MA, Allston, MA
Jon J. Warner, MD, Boston, MA
Andrew Jawa, MD, Cambridge, MA

Implant purchase price was the main driver of cost in total shoulder arthroplasty, while efforts to reduce length of stay may prove effective in reducing patient-to-patient variation in costs.

PAPER 313
An Analysis of Costs Associated with Shoulder Arthroplasty
Peter N. Chalmers, MD, Salt Lake City, UT
Timothy Kahn, MD, Holladay, UT
Kortnie Broschinsky, Salt Lake City, UT
Hunter Ross, DO, Wyoming, MI
Rachel Stertz, BS, Salt Lake City, UT
Richard Nelson, Salt Lake City, UT
Minkyung Yoo, PhD, Salt Lake City, UT
Robert Z. Tashjian, MD, Salt Lake City, UT

This analysis of direct costs associated with shoulder arthroplasty shows that the operative procedure accounts for most costs and correlates include age, reverse use, and a diagnosis other than OA.
Wednesday Educational Programs

11:30 AM

Paper 314

Shoulder Arthroplasty in Patients with Upper Extremity Lymphedema May Result in Transient or Permanent Lymphedema Worsening

Julia Lee, MD, Clovis, CA
Ngoc Tran Nguyen, Rochester, MN
Dave Shukla, MD, Newport Beach, CA
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Saint Simons Island, GA
Joaquin Sanchez-Sotelo, MD, Rochester, MN

Shoulder arthroplasty on an upper extremity affected by lymphedema improves pain and motion, but surgery should be carefully considered due to the potential risk of infection and worsening lymphedema.

11:36 AM

Paper 315

Osteoporosis is an Independent Risk Factor for Implant-Related Complications Following Anatomic and Reverse Total Shoulder Arthroplasty

Jourdan M. Cancienne, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

Osteoporosis represents a significant, independent risk factor for periprosthetic fracture and revision shoulder arthroplasty within two years of surgery, regardless of the type of implant.

11:48 AM

Paper 316

A Higher Altitude is an Independent Risk Factor for Venous Thromboembolisms following Total Shoulder Arthroplasty

Dhanur Damodar, MD, Miami, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Jonathan I. Sheu, BS, Miami, FL
Chester J. Donnally, MD, Miami, FL
Jonathan C. Levy, MD, Ft Lauderdale, FL
Lee D. Kaplan, MD, Coral Gables, FL
Julianne Munoz, MD, Miami, FL

Our study of Medicare patients demonstrates a significantly increased risk of PEs in postoperative TSA patients at altitudes greater than 4000 feet.

11:54 AM

Paper 317

Opioid-Free Shoulder Arthroplasty: A Reality with Multimodal Pain Management

Kiran Chatha, MD, Miami, FL
Sandra Koen, ATC, Weston, FL
Danielle L. Malone, MPH, Weston, FL
Gregory J. Gilot, MD, Davie, FL
Vani J. Sabesan, MD, Weston, FL

Opioid-free shoulder arthroplasty is possible through use of patient education and multimodal pain management without adversely affecting patient reported outcomes or satisfaction.

12:00 PM

Paper 318

Pulmonary Comorbidities are Associated with Increased Major Complication Rates Following Indwelling Interscalene Nerve Catheters for Shoulder Arthroplasty

Ian Power, MD, Germantown, TN
Thomas (Quin) W. Throckmorton, MD, Germantown, TN
Richard A. Smith, PhD, Memphis, TN
Frederick M. Azar, MD, Memphis, TN
Tyler J. Brolin, MD, Collierville, TN

Pulmonary comorbidities and increased ASA score significantly raise the risk of indwelling ISC placement and patients with these may benefit from alternative pain management strategies.

Discussion

Paper Presentations 319-327

11:00 AM - 12:30 PM

Palazzo Ballroom L

Trauma IV (319-327): Femur fractures
Moderators: Timothy S. Achor, MD, Bellaire, TX and Michael J. Beltran, MD, San Antonio, TX

11:00 AM

Paper 319

Subtrochanteric Femur Fractures Treated with Reconstruction Nails have a Lower Reoperation Rate Compared to Cephalomedullary Nail Fixation: Matched Cohort Study of 232 Patients

Austin Heare, MD, Aurora, CO
Harsh R. Parikh, Plymouth, MN
David Shearer, MD, San Francisco, CA
William T. Obremskey, MD, MPH, Nashville, TN
Henry C. Sagi, MD, Seattle, WA
Robert V. O’Toole, MD, Lutherville, MD
Brian Cunningham, MD, Saint Paul, MN

This retrospective cohort shows a significantly higher re-operation rate in subtrochanteric femur fractures treated with single-screw cephalomedullary nails compared to dual-screw reconstruction nails.

Discussion

11:06 AM

Paper 320

Femoral Neck Shortening and Varus Collapse after Fixation of Stable Pertrochanteric Femur Fractures

David Ciuffo, MD, Rochester, NY
Catherine A. Humphrey, MD, Rochester, NY
John P. Ketz, MD, Pittsford, NY

A comparison of cephalomedullary nails and sliding hip screws in maintenance of reduction in stable pertrochanteric femur fractures.
11:12 AM  PAPER 321
Factors Associated with Collapse of Intertrochanteric Femur Fractures
Michael Ricci, St. Louis, MO
William M. Ricci, MD, New York, NY
Christopher McAndrew, MD, St. Louis, MO
Anna N. Miller, MD, St. Louis, MO

Implant type is a significant modifiable risk factor for shortening of IT fractures. TFN-Blade was associated with the greatest, TFN-Screw intermediate, and InterTAN the least amount of shortening.

Discussion

11:24 AM  PAPER 322
The Utility of Traction Radiographs in Preoperative Planning for Hip Fractures
Graham Albert, BA, Dallas, TX
Elizabeth P. Davis, MD, Arlington, TX
Adeet Amin, BA, Missouri City, TX
John W. Munz, MD, Houston, TX
Joshua L. Gary, MD, Houston, TX
Andrew M. Choo, MD, Houston, TX
Timothy S. Achor, MD, Bellaire, TX
Stephen J. Warner, MD, PhD, Houston, TX

Traction hip radiographs for low energy, geriatric intertrochanteric femur fractures rarely alters the preoperative planning for surgical bed, patient positioning, and fixation implant.

11:30 AM  PAPER 323
Greater Trochanteric Fractures with Intertrochanteric Extension Identified on MRI: What is the Rate of Displacement when Treated Nonoperatively?
William T. Kent, MD, San Diego, CA
Theresa Whitchurch, San Diego, CA
Jameel H. Bardesi, MD, San Diego, CA
Brady K. Huang, MD, San Diego, CA

Greater trochanteric fractures with less than 50% extension into the Intertrochanteric region have a low likelihood of displacement and high union rates when treated nonoperatively.

11:36 AM  PAPER 324
Surgical Delay Increases the Rate of 30-Day Complications and Mortality in Lower Energy Femoral Shaft Fractures
Ryan Digiavanni, MD, Phoenix, AZ
Lauren Nowak, MSc, Toronto, ON, Canada
Robert S. Walker, MD, Phoenix, AZ
David Sanders, MD, London, ON, Canada
Abdel-Rahman Lawandy, FRCS, London, ON, Canada
Melanie Macnevin, Toronto, Ontario, Canada
Michael D. McKee, MD, FRCS, Phoenix, AZ
Emil H. Schemitsch, MD, London, ON, Canada

With only 73% of patients being treated in the 24-hour timeframe that constitutes best practice for treatment of femoral shaft fractures, there remains significant room for improvement.

Discussion

11:48 AM  PAPER 325
Effect of Nail Size, Insertion, and Δ Canal-Nail on the Development of a Nonunion after Intramedullary Nailing of Femoral Shaft Fractures
Rafael Serrano-Riera, MD, Tampa, FL
Hassan R. Mir, MD, MBA, Tampa, FL
Anjan R. Shah, MD, Tampa, FL
Anthony F. Infante, DO, Sun City Center, FL
Benjamin Maxson, DO, Tampa, FL
David T. Watson, MD, Tampa, FL
Roy W. Sanders, MD, Tampa, FL

Nail size, ante/retrograde insertion, and the canal-nail ratio does not appear to affect healing rates. A 10mm reamed nail could be universally fit on any femur shaft fracture with expectable outcomes.

Discussion

11:54 AM  PAPER 326
High Prevalence of Osteopenia and Osteoporosis in Hip Fracture Patients under 60 Years - A Prospective Study with Bone Mineral Density Assessment at the Time of the Fracture
Sebastian Strøm Rønnquist, Malmö
Bjarke Viberg, PhD, MD, Odense C, Denmark
Morten Kristensen, PT, PhD, Valby, Denmark
Carsten Fladmose Madsen, MD, Odense C, Denmark
Kristina Akesson, MD, PhD, Malmo, Sweden
Soren Overgaard, MD, Odense C, Denmark
Henrik Palm, MD, Hvidovre, Denmark
Cecilia Rogmark, MD, PhD, Malmo, Sweden

In a cohort of non-elderly hip fracture patients, there is a high rate of osteopenia and osteoporosis, with no association to age group, sex, trauma mechanism, fracture type, or ASA classification.

12:00 PM  PAPER 327
Predictors of Nonunions in Young Patients with Femoral Neck Fractures
Adeet Amin, BA, Missouri City, TX
Graham Albert, BA, Dallas, TX
Elizabeth Gausden, MD, New York, NY
John W. Munz, MD, Houston, TX
Joshua L. Gary, MD, Houston, TX
Andrew M. Choo, MD, Houston, TX
Timothy S. Achor, MD, Bellaire, TX
Stephen J. Warner, MD, PhD, Houston, TX

Factors that contribute to the development of nonunions in young patients are poorly understood; however, looking at fracture characteristics may be useful in predicting outcomes.

Discussion
**PAPER PRESENTATIONS 328-336**

**11:00 AM - 12:30 PM**

**Palazzo Ballroom J**

**Spine III (328-336): Minimally Invasive Spine Surgery**
Moderators: Chadi A. Tannoury, MD, Boston, MA and Daniel K. Park, MD, Bloomfield Hills, MI

**11:00 AM**

**PAPER 328**

**Minimally Invasive Transforaminal Lumbar Interbody Fusion vs. Minimally Invasive Lateral Lumbar Interbody Fusion: A Comparison of Immediate Postoperative Outcomes for the Assessment of Decompression**

Avani Vaishnav, MBBS, New York, NY
Catherine Himo Gang, MPH, New York, NY
Steven McAnany, MD, St. Louis, MO
Todd J. Albert, MD, New York, NY
Sheeraz Qureshi, MD, New York, NY

A comparison of patient-reported outcomes of minimally invasive transforaminal lumbar interbody fusion to minimally invasive lateral lumbar interbody fusion to assess decompression.

**11:06 AM**

**PAPER 329**

**Complication Risk in Primary and Revision Minimally Invasive Lumbar Interbody Fusion: A Comparable Alternative to Conventional Open Techniques?**

Cole Bortz, BA, New York, NY
Samantha Horn, BA, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Jessica Morton, MD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Virginie Lafage, PhD, New York, NY
Michael C. Gerling, MD, Brooklyn, NY
Peter G. Passias, MD, Westbury, NY

Clinical outcomes of revision MIS lumbar interbody fusion were similar to those of primary surgery, with no differences in op-time, inpatient length of stay, EBL, or rates of postop complications.

**11:12 AM**

**PAPER 330**

**Comparative Analysis of Three Posterior Lumbar Interbody Fusion Techniques: Open Transforaminal Lumbar Interbody Fusion, Midline Posterior Lumbar Interbody Fusion, and Wiltse Minimally Invasive Transforaminal Lumbar Interbody Fusion**

David Ge, BA, New York, NY
Nicholas Stekas, BS, MS, New York, NY
Christopher Varlotta, New York, NY
Charla R. Fischer, MD, New York, NY
Anthony Petrizzo, DO, Hicksville, NY
Themistocles S. Protopsaltis, MD, New York, NY
Peter G. Passias, MD, Westbury, NY
Thomas J. Errico, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY

Wiltse approach TLIF demonstrated the lowest EBL, LOS, complication rate, and readmission rate when compared to traditional open approach, but longer fluoroscopy times.

**11:24 AM**

**PAPER 331**

**The Impact of Diabetes Mellitus on Length of Stay and Direct Hospital Costs after Minimally Invasive Transforaminal Lumbar Interbody Fusion**

Dil V. Patel, BS, Chicago, IL
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Ankur S. Narain, BA, Baltimore, MD
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Andrew M. Block, BS, Smyrna, GA

This study aims to determine if diabetes mellitus as a comorbidity is associated with inpatient length of stay or direct hospital costs after minimally invasive transforaminal lumbar interbody fusion.

**11:30 AM**

**PAPER 332**

**Complications Associated with Minimally Invasive Anterior to the Psoas Fusion of the Lumbosacral Spine: A Review of 909 Patients**

Tony Y. Tannoury, MD, Boston, MA
Harish Kempegowda, MD, Boston, MA
Kaveh Haddadi, MD, Boston, MA
Chadi A. Tannoury, MD, Boston, MA

MIS ATP approach provides a safe access to anterolateral interbody fusions between T12-S1. The ATP approach is performed by the spine surgeon, does not require neuromonitoring, and warrants minimal to no psoas muscle retraction resulting in significantly reduced postoperative thigh pain and rare neurologic injuries.

**11:36 AM**

**PAPER 333**

**Minimally Invasive versus Open Transforaminal Lumbar Interbody Fusion Surgery: An Analysis of Opioids, Non-Opioid Analgesics, and Perioperative Characteristics**

Aaron Hockley, FRCSC, New York, NY
David Ge, BA, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Mohamed A. Moawad, MPH, New York, NY
Peter G. Passias, MD, Westbury, NY
Thomas J. Errico, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY
Themistocles S. Protopsaltis, MD, New York, NY
Charla R. Fischer, MD, New York, NY

MIS TLIF cases required less inpatient opioids and had a decreased incidence of opioid dependence at three month follow up compared to open TLIF.

**Discussion**

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* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure**

### PAPER 334
**11:48 AM**
Greater PHQ-9 Score Predicts Worse Clinical Outcomes Following Minimally Invasive Transforaminal Lumbar Interbody Fusion

*Saikee S. Karmarkar, BS, Chicago, IL
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Brittany Haws, MD, Chicago, IL
Jordan Guntin, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL*

The purpose of this study is to determine if there exists an association between preoperative depression, assessed by PHQ-9, and patient reported outcomes after MIS TLIF.

### PAPER 335
**11:54 AM**
The Influence of Body Mass Index on Functional Outcomes, Satisfaction, and Return To Work After Minimally-Invasive Transforaminal Lumbar Interbody Fusion: A Five-Year Follow-Up Study

*Graham S. Goh, MBBS, MRCS, Singapore, Singapore
Ming Han Lincoln Liow, MD, Singapore, Singapore
William Yeo, Singapore, Singapore
Zhixing Marcus Ling, MD, Singapore, Singapore
Chang Ming Guo, MBBS, MRCS, Singapore, Singapore
Wai Mun Yue, MD, Singapore, Singapore
Seang B. Tan, FRCS, MBBS, Singapore, Singapore*

Non-obese patients had improved physical well-being. Obesity had no impact on patients’ ability to return to work. Equivalent proportions of patients were satisfied up to five years after MIS-TLIF.

### PAPER 336
**12:00 PM**
Diminishing Clinical Returns of Multilevel Minimally Invasive Lumbar Interbody Fusion

*Peter G. Passias, MD, Westbury, NY
Cole Bortz, BA, New York, NY
Samantha Horn, BA, New York, NY
Frank A. Segresto, BS, Oakdale, NY
Kartik Shenoy, MD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY
Michael C. Gerling, MD, Brooklyn, NY*

Compared to open surgery, MIS interbody fusions provided diminishing clinical returns for multilevel procedures.

**Discussion**
Adolescent Obesity is Associated with More Severe Presentations of Osteochondritis Dissecans of the Knee

**PAPER 340**

**Wednesday**

11:24 AM

Davis Rogers, BA, Baltimore, MD  
Walter B. Klyce, BA, Baltimore, MD  
Tymoteusz Kajstura, Baltimore, MD  
Rushyuan J. Lee, MD, Baltimore, MD

In adolescent patients with osteochondritis dissecans of the knee, BMI percentile was strongly correlated with severity of lesion at initial presentation, need for surgery, and location of lesion.

Childhood Obesity and Fracture Risk: A Region-Wide Longitudinal Cohort Study of 466,000 Children with Up to 11 Years of Follow Up

**PAPER 341**

**Wednesday**

11:30 AM

Katherine L. Butler, MBCHB, Oxon, United Kingdom  
Jose Luis Poveda-Marin, Barcelona, Spain  
Daniel Martinez-Laguna, MD, PhD, Barcelona, Spain  
Carlen Reyes, MD, PhD, Cambrils, Spain  
Jennifer Lane, MD, London, United Kingdom  
Jeroen De Bont, Barcelona, Spain  
Muhammad Javaid, Oxford, United Kingdom  
Cyrus Cooper, Southampton, United Kingdom  
Jennifer Logue, MBCHB, MD, Glasgow, United Kingdom  
Talita Duarte Salles, PhD, Barcelona, Spain  
Dominic Furniss, Oxford, United Kingdom  
Daniel Prieto-Alhambra, MD, Oxford, United Kingdom  
GREMPAL research group, Catalonia, Spain

Childhood obesity is associated with a significantly increased risk of forearm, wrist, hand, ankle, and foot fractures in this large longitudinal study.

The Epidemiology of Back Pain in Children and Adolescents: A Cross-Sectional Study of 3,669 American Youth

**PAPER 342**

**Wednesday**

11:36 AM

Jonathan M. Schachne, BA, New York, NY  
Colleen Wixted, BS, Brooklyn, NY  
Daniel W. Green, MD, New York, NY  
Roger F. Widmann, MD, New York, NY  
Peter D. Fabricant, MD, MPH, New York, NY

The current study quantifies the prevalence of back pain in an epidemiologic, census-derived sample of 2,001 American children and adolescents.

Perioperative Ketorolac for Supracondylar Humerus Fracture in Children Decreases Postoperative Pain, Opioid Usage, Hospitalization Cost, and Length of Stay

**PAPER 343**

**Wednesday**

11:48 AM

Alexander J. Adams, BS, Philadelphia, PA  
Matthew Buczek, BS, Philadelphia, PA  
Jack M. Flynn, MD, Philadelphia, PA  
Apuvra Shah, MD, MBA, Philadelphia, PA

Perioperative ketorolac administration in children undergoing CRPP of displaced supracondylar humerus fractures may provide decreased pain, opioid requirements, costs, and length of stay.

Evaluation of Opioid Disposal Opportunities in the United States

**PAPER 344**

**Wednesday**

11:54 AM

Christopher A. Jobst, MD, Columbus, OH  
Satbir Singh, BS, Columbus, OH  
Julie B. Samora, MD, Upper Arlington, OH

Deficiencies exist in the current opioid return system as only 28% of children's hospital pharmacies, police stations, and commercial pharmacies across the nation accept the return of unused opioids.

Preemptive Opioid-Sparing Medication Protocol Decreases Pain and Length of Hospital Stay in Children Undergoing Posterior Spinal Instrumented Fusion for Scoliosis

**PAPER 345**

**Wednesday**

12:00 PM

Selina Poon, MD, S Pasadena, CA  
De-An Zhang, MD, Pasadena, CA  
Ronen Sever, MD, Sierra Madre, CA  
Frederic R. Bushnell, MBA, MD, Pasadena, CA  
Marilan Luong, MPH, Pasadena, CA  
Ji-Ming Yune, MD, Pasadena, CA  
Robert H. Cho, MD, Los Angeles, CA

A preliminary report of a novel preemptive opioid-sparing pediatric pain medication protocol. Retrospectively reviewed 116 PSIF cases and found a decrease in length of stay and maximal pain score.

Operative and Nonoperative Management of Osteochondritis Dissecans in the Knee of Skeletally Immature Patients: Progression Rates to Osteoarthritis and Arthroplasty at Mean 14-Years Follow Up

**PAPER 875**

**Wednesday**

12:06 PM

Mario Hevesi, MD, Zumbrota, MN  
Thomas L. Sanders, MD, Rochester, MN  
Ayoosh Pareek, MD, Rochester, MN  
Todd A. Milbrandt, MD, Rochester, MN  
Bruce A. Levy, MD, Rochester, MN  
Michael J. Stuart, MD, Rochester, MN  
Daniel B. Saris, MD, Ph D, Rochester, MN  
Aaron J. Krych, MD, Rochester, MN

Skeletally immature OCD patients have promising histories, with an estimated 14% risk of persistent knee pain, 6% symptomatic osteoarthritis, and 3% conversion to TKA at 14 years mean follow up.

1:30 PM - 2:30 PM  
**FREE**  
**NO TICKET REQUIRED**

**CAREER DEVELOPMENT**

**Wednesday**

1:30 PM - 2:30 PM

Writing a Competitive Grant Application  
**CD9**  
**Moderator: Kurt P. Spindler, MD, Lyndhurst, OH**  
**Room 4505**

Grants can be competitive and non-competitive. This course provides helpful tips and examples on writing a competitive grant application.
SYMPOSIUM

1:30 PM - 3:30 PM
Palazzo Ballroom L

H Management of Bone Defects
Moderator: Geoffrey Marecek, MD, Los Angeles, CA

Bone defects from trauma or infection are challenging. We will discuss options for managing defects of varying sizes.

I. Bone Transport
Mitchell Bernstein, MD, Montreal, QC, Canada

II. Induced Membrane Technique
Michael J. Gardner, MD, Redwood City, CA

III. Selection of Graft and Primary Grafting
Milton T. Little, MD, Los Angeles, CA

IV. Free Vascularized Bone Transfer
Milan V. Stevanovic, MD, PhD, Los Angeles, CA

INSTRUCTIONAL COURSE LECTURES

1:30 PM - 3:30 PM

241 The Treatment and Management of Acetabular Bone Loss in Revision Total Hip Arthroplasty
Moderator: Wayne G. Paprosky, MD, Winfield, IL
Daniel J. Berry, MD, Rochester, MN
Thomas K. Fehring, MD, Charlotte, NC
David G. Lewallen, MD, Rochester, MN

Upon completion of this course, participants have an algorithmic approach on how to evaluate acetabular bone loss and determine how to surgically treat this entity. Clinical cases help reinforce concepts presented in this instructional course lecture.

242 How Do I Get Out of this Problem? Effectively Solving Common Intraoperative and Early Postoperative Challenges in Primary Total Knee Arthroplasty
Moderator: Daniel J. Berry, MD, Rochester, MN
Douglas A. Dennis, MD, Denver, CO
Steven J. MacDonald, MD, London, ON, Canada
Mark W. Pagnano, MD, Rochester, MN

This course covers how to solve common intraoperative and postoperative challenges in primary total knee arthroplasty, including exposure, ligament balance, stability, patellar tendon problems, wound, and knee motion problems.

Total Ankle Arthroplasty: Understanding the Technological Revolution in Managing End Stage Ankle Arthritis
Moderator: Steven L. Haddad, MD, Glenview, IL
Gregory C. Berlet, MD, Westerville, OH
Thomas O. Clanton, MD, Vail, CO
Murray Penner, MD, Vancouver, BC, Canada

This new course will take the participant through the world of total ankle arthroplasty. No piece of metal will be left unturned, as the surgeon begins the journey with a fact-based discussion on the merits and detractions of arthroplasty vs. arthrodesis. Once on the road to performing a total ankle arthroplasty, philosophies in implant choice is next dissected through implant design, the capability of establishing the center of ankle rotation, and whether mobile or fixed-bearing makes a difference. The road becomes more challenging as the curves of deformity correction become greater, and successful navigation of structural foot and/or ankle malformation, instabilities, and degenerative alterations will be highlighted and conquered. Finally, undergoing a primary ankle arthroplasty requires confidence in the ability to revise the construct should acute or chronic failure develop. This final rocky road has been smoothed out through an understanding of modes of failure and methods of correction, allowing the participant to cross the finish line with an unscathed reputation as a competent total ankle replacement surgeon.

Global Volunteerism for Orthopaedic Surgeons
Moderator: Coleen S. Sabatini, MD, MPH, Oakland, CA
Todd S. Kim, MD, Burlingame, CA
Divya Singh, MD, Seattle, WA
Peter G. Trafton, MD, Providence, RI

Learn how to be an effective global volunteer and impart your orthopaedic knowledge to strengthen and empower the global health workforce by volunteering overseas.

An Orthopaedist’s Introduction to the American Medical Association Guides to Permanent Physical Impairment by Examples Using the 4th, 5th, and 6th Editions
Moderator: J. Mark Melhorn, MD, Wichita, KS

The need for accurate impairment and disability evaluations continues to increase. This course is designed to select the most common musculoskeletal diagnoses and review how to evaluate and rate using the 4th, 5th, and 6th editions of the American Medical Association Guides.
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WEDNESDAY EDUCATIONAL PROGRAMS

246
Room 2101
Compression Neurpathies – Getting It Right So You Don't Have to Do It Again or Deal with Complications
Moderator: Dean G. Sotereanos, MD, Pittsburgh, PA
John R. Fowler, MD, Warrendale, PA
Marc J. Richard, MD, Durham, NC
Miro Zizzo, MD, Rochester, MN

The management of compression neurpathies throughout the upper extremity are presented in a case-based manner. Detailed discussion regarding pearls and pitfalls of initial treatment, and avoiding the potential complications as well as managing them, aid the orthopaedic surgeon in practice.

247
Room 4201
Soft Tissue Tumors: A Pictorial Guide to Diagnosis and Treatment
Moderator: Valerae O. Lewis, MD, Houston, TX
Timothy A. Damron, MD, Lafayette, NY
Ginger E. Holt, MD, Nashville, TN
Carol D. Morris, MD, MS, Baltimore, MD

The course is a pictorial-based guide to the management and treatment of soft tissue tumors. It was previously presented as a very well received and highly rated symposium.

248
Room 3201
Surgical Techniques for Skeletally Immature Anterior Cruciate Ligament
Moderator: Shital N. Parikh, MD, Cincinnati, OH
Daniel W. Green, MD, New York, NY
Benton E. Heyworth, MD, Boston, MA
Eric J. Wall, MD, Cincinnati, OH

The presence of physis and potential for growth disturbances makes pediatric anterior cruciate ligament surgery challenging. This ICL focuses on varied surgical techniques to highlight pearls and complications.

249
Room 4105
Employment Contracts: The Good, the Bad, and the Ugly
Moderator: Jack M. Bert, MD, Woodbury, MN
David M. Glaser, MD, Minneapolis, MN
Louis F. McIntyre, MD, Sleepy Hollow, NY
Nicholas A. Sgaglione, MD, Great Neck, NY

Employment contracts are fraught with complications and an employment contract “checklist” is important to develop and understand when negotiating a hospital or private practice agreement.

250
Room 3105
Contemporary Issues with the Management of Distal Humerus Fractures in the Older Aged Patient
Moderator: Jesse B. Jupiter, MD, Boston, MA
Graham J. King, MD, London, ON, Canada
Shawn W. O'Driscoll, MD, Rochester, MN
Scott P. Steinmann, MD, Rochester, MN

This course evaluates contemporary options and outcomes for the management of of distal humerus fractures in the older aged patient.

251
Room 4305
I've Got a Culture Positive for P. Acnes—What Do I Do Now? The Diagnosis and Management of Periprosthetic Shoulder Infections
Moderator: Grant E. Garrigues, MD, Chicago, IL
Jason Hsu, MD, Seattle, WA
Eric T. Ricchetti, MD, Cleveland, OH
John W. Sperling, MD, MBA, Rochester, MN

The diagnosis and management of periprosthetic shoulder infections are reviewed with an emphasis on P. acnes. Reconstructive challenges following shoulder explantation are presented in an interactive, case-based format.

252
Room 3404
Evidence-Based Management of Spine Conditions in the Elite Athlete
Moderator: Wellington K. Hsu, MD, Chicago, IL
Andrew C. Hecht, MD, New York, NY
Tyler J. Jenkins, MD, Chicago, IL
Robert G. Watkins, MD, Marina Del Rey, CA

Spine conditions have been studied extensively in the general population, but generalizing this data to the elite athlete is controversial. Recent literature has provided new insight into the management of spine conditions in the elite athlete.

253
Room 4101
Trumions, Tapers, and Corrosion in Total Hip Arthroplasty: What’s All the Fuss About? What Every Surgeon Should Know
Moderator: Joshua J. Jacobs, MD, Chicago, IL
Robert L. Barrack, MD, St. Louis, MO
Mathias P. Bostrom, MD, New York, NY
James A. Browne, MD, Charlottesville, VA
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, OH
Joshua J. Jacobs, MD, Chicago, IL
Atul F. Kamath, MD, Philadelphia, PA
Arthur L. Malkani, MD, Louisville, KY
Douglas E. Padgett, MD, New York, NY
Christopher L. Peters, MD, Salt Lake City, UT
Peter K. Sculco, MD, New York, NY
Michael J. Taunton, MD, Rochester, MN
Thomas P. Vail, MD, San Francisco, CA

Faculty evaluates what we know about the frequency of the problem and the clinical circumstances under which the problem occurs. Next we cover the current state of knowledge about how various factors including taper design and materials affect the likelihood of this problem developing. Finally we cover how to best treat the problem when revision is required, when to remove and when to retain implants, what materials to use if a taper is retained (ceramic head etc.), and how to manage soft tissues that may have been damaged by taper corrosion.
Techniques and Decision Making in Common Fractures: A Case-Based Small Group Session
Moderator: Paul Tornetta III, MD, Boston, MA
Joshua L. Gary, MD, Houston, TX
Daniel S. Horwitz, MD, Danville, PA
Clifford B. Jones, MD, FACS, Phoenix, AZ
Stephen Kottmeier, MD, Stony Brook, NY
Samir Mehta, MD, Philadelphia, PA
May P. Nguyen, MD, El Paso, TX
J. Spence Reid, MD, Hummelstown, PA
Judith Siegel, MD, Worcester, MA
J. Tracy Watson, MD, Phoenix, AZ
Philip R. Wolinsky, MD, Sacramento, CA

This course involves case-based teaching with discussion and questions and answers for various trauma cases.

1:30 PM - 3:30 PM
Room 2102
Adult Reconstruction Hip III (346-360): THR Complications
Moderators: Beau S. Konigsberg, MD, Omaha, NE and James J. Purtill, MD, Philadelphia, PA

1:30 PM
Smoking and Total Hip Arthroplasty in 2014: Increased Inpatient Complications and Costs
Eytaan Debbi, MD, PhD, Los Angeles, CA
Sean Rajaei, MD, Los Angeles, CA
Andrew I. Spitzer, MD, Beverly Hills, CA
Guy D. Paiement, MD, Los Angeles, CA
Smokers undergoing total hip arthroplasty have a higher rate of inpatient complications and higher hospital costs.

1:36 PM
Complications Following Total Hip Arthroplasty for Osteoarthritis Versus Hip Fracture
Ryan Charette, MD, Philadelphia, PA
Matthew Sloan, MD, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA
This is a large database study looking at perioperative complications of total hip arthroplasty done for osteoarthritis versus femoral neck fracture.

1:42 PM
Peripheral Nerve Injury after 207,000 Total Hip Arthroplasties Using a New York State Database (SPARCS)
Alexander Christ, MD, New York, NY
Yu-Fen Chiu, MS, New York, NY
Amethia D. Joseph, New York, NY
Geoffrey H. Westrich, MD, New York, NY
Stephen Lyman, PhD, New York, NY
In over 207,000 THAs, the incidence of nerve injury was 0.23%. Fracture as the indication for surgery, previous spine disorder, and in-hospital complications increased patients’ risk for nerve injury.

Incidence, Causes, and Timing of 30-Day Readmission following Total Hip Arthroplasty
Gannon Curtis, MD, Cleveland, OH
Michael Jawad, MD, Dearborn, MI
Linsen T. Samuel, MBA, MD, Floral Park, NY
Carlos A. Higuera Rueda, MD, Weston, FL
Bryan E. Little, MD, Detroit, MI
Hussein F. Danwiche, MD, Dearborn, MI
The most common causes of readmission after THA include musculoskeletal complications, deep SSI, non-SSI infections, GI complications, and CV complications, but causes of readmission change over time.

2:00 PM
Early Surgical Complications of Total Hip Arthroplasty Related to Surgical Approach
Wayne Hoskins, MBBS, PhD, East Melbourne, Australia
Roger Bingham, MD, Melbourne, Australia
Richard De Steiger, MD, Richmond, Australia
While there is no difference in early complication rates between surgical approaches for THA, the complication profile differed and a higher rate of major complications occurred with the DAA with complications being femoral sided.

2:06 PM
Prior Hip Arthroscopy Increases Risk for Total Hip Arthroplasty Complications: A Matched-Controlled Study
Tyler J. Vovos, MD, Durham, NC
Alexander L. Lazarides, MD, Durham, NC
Beau J. Kildow, MD, Durham, NC
Sean P. Ryan, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC
This matched-control study found increased surgical times, greater blood loss, and increased intraoperative and postoperative complications in patients undergoing hip arthroscopy conversion to THA.

2:18 PM
Which Postoperative Day after Total Joint Arthroplasty are Catastrophic Events Most Likely to Occur?
Daniel J. Johnson, MD, Chicago, IL
Matthew J. Hartwell, MD, Chicago, IL
Ryan E. Harold, MD, Chicago, IL
Joseph A. Weiner, MD, Chicago, IL
David W. Manning, MD, Chicago, IL
Catastrophic events peaked on postoperative day 2 with cardiac events most likely in the first day but pulmonary embolus thereafter.
Wednesday Educational Programs

2:24 PM  PAPER 353
Timing of Lumbar Spinal Fusion Impacts Total Hip Arthroplasty Outcomes
Abiram Bala, MD, Menlo Park, CA
Deepak V. Chona, MD, Menlo Park, CA
Derek F. Amanatullah, MD, Redwood City, CA
Serena S. Hu, MD, Redwood City, CA
Kirkham B. Wood, MD, Redwood City, CA
Todd Alamin, MD, Redwood City, CA
Ivan Cheng, MD, Redwood City, CA

We studied timing between total hip arthroplasty (THA) and lumbar spine fusion (LSF). We found lower dislocation and revision rates with LSF after THA, compared to THA after LSF.

2:30 PM  PAPER 354
Risk Factors for Intraoperative Periprosthetic Femoral Fractures during Primary Total Hip Replacement: An Analysis from the National Joint Registry for England and Wales
Jonathan N. Lamb, MBBS, Leeds, United Kingdom
Gulraj Matharu, MBCHB, Worcestershire, United Kingdom
Ben Van Duren, Leeds, United Kingdom
George S. Whitwell, FRCS (Ortho), MBCHB, Leeds, United Kingdom
Anthony Redmond, PhD, Leeds, UK, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom

An analysis of risk factors for intraoperative periprosthetic femoral fractures in 798,983 primary total hip replacements and 5,109 intraoperative periprosthetic fractures.

2:42 PM  PAPER 355
Complications Following Total Hip Arthroplasty in Inflammatory Arthritis versus Osteoarthritis
Shawn S. Richardson, MD, New York, NY
Cynthia A. Kahlenberg, MD, New York, NY
Susan Goodman, MD, New York, NY
Linda A. Russell, New York, NY
Thomas P. Sculco, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Mark P. Figgie, MD, New York, NY

Independent of other comorbidities, patients with inflammatory arthritis are at high risk of transfusion, mechanical complications, infection, and readmission following THA.

2:48 PM  PAPER 356
Are Postoperative Hip Precautions Necessary After a Total Hip Arthroplasty via the Posterior Approach? Preliminary Results of a Prospective Randomized Trial
Matthew W. Tetreault, MD, Chicago, IL
Jefferson Li, BA, Chicago, IL
Tori Edmiston, Colorado Springs, CO
Denis Nam, MD, MSc, Chicago, IL
COL. (ret) Tad L. Gerlinger, MD, Winnetka, IL
Craig J. della Valle, MD, Chicago, IL
Brett R. Levine, MD, Chicago, IL

Preliminary results of a prospective randomized trial suggest that removal of posterior hip precautions after primary THA through a posterior approach is not associated with risk of early dislocation.

2:54 PM  PAPER 357
Preoperative Functional Status Predicts Increased Morbidity and Mortality following Total Hip Arthroplasty
Gannon Curtis, MD, Cleveland, OH
Ays Hammad, MD, Warren, MI
Hiba Anis, MD, Cleveland, OH
Carlos A. Higuera Rueda, MD, Weston, FL
Bryan E. Little, MD, Detroit, MI
Hussein F. Darwiche, MD, Dearborn, MI

Patients who are functionally dependent and undergoing total hip arthroplasty are at higher risk of mortality, adverse perioperative outcomes, and complications.

3:06 PM  PAPER 358
Biomarkers Correlate with Self-Reported Pain Levels Indicate Th17-Cell Immune Reactivity in Total Joint Arthroplasty Patients
Lauryn Samelko, PhD, Chicago, IL
Marco S. Caicedo, PhD, Chicago, IL
Joshua J. Jacobs, MD, Chicago, IL
Nadim Hallab, Chicago, IL

Serum biomarkers in painful TJRs are significantly increased indicative of a M1 macrophage response, (GMCSF, IL-12, IL-18, IL-1β, and IL-6) and Th17 cell activation (IL-17A, IL-21, and IL-22).

3:12 PM  PAPER 359
Is there a Safe Zone for Combined Anteversion in Total Hip Arthroplasty?
Christina I. Esposito, PhD, New York, NY
Peter K. Sculco, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
David J. Mayman, MD, New York, NY
Seth A. Jerabek, MD, New York, NY

We did not find a safe zone for combined anteversion in THA within which the risk of dislocation is low.

3:18 PM  PAPER 360
Influence of Morphology and Overhang of Acetabular Cup on Occurrence of Iliopsoas Impingement after Total Hip Arthroplasty and its Therapeutic Result
Takuro Ueno, MD, Kanazawa, Japan
Tamon Kabata, MD, Kanazawa, Japan
Yositomo Kajino, MD, Kanazawa, Japan
Yositani Junya, Kanazawa City, Japan
Ken Ueoka, Kanazawa City, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

The study showed that IPI occurred irrespective of cup designs and liner types but was associated with extent of cup overhang especially at 30mm height from the tear drop.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
1:30 PM - 3:30 PM
Room 4401

Adult Reconstruction Knee V (361-375): Economics and TKA
Moderators: Wade P. McAlister, MD, Houston, TX and
Stephen R. Davenport, MD, Nichols Hills, OK

1:30 PM
PAPER 361
Are Joint Surgeons Adequately Compensated for Single-Component vs. Double-Component Revision Total Knee Arthroplasty? An Analysis of Relative Value Units
Azeem T. Malik, MBBS, Columbus, OH
Thomas J. Scharschmidt, MD, Delaware, OH
Mengnai Li, MD, PhD, Powell, OH
Nikhil Jain, MBBS, MD, Columbus, OH
Saifar N. Khan, MD, Columbus, OH

Orthopaedic surgeons are reimbursed at a higher rate for single-component revision TKAs vs. double-component revision TKAs, despite higher complexity and longer operative times of the latter.

1:36 PM
PAPER 362
The Economics of Antibiotic Cement in Total Knee Arthroplasty: Added Cost with No Reduction In Infection Rates
Alexander Rondon, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Hannah Levy, BS, Philadelphia, PA
Michael West, CEO, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

The routine use of antibiotic cement in primary TKA is not cost effective, adding an additional $302 per case without a reduction in the rate of PJI.

1:42 PM
PAPER 363
Robotic-Assisted Total Knee Arthroplasty: A Comprehensive Analysis
Chris Neighorn, Portland, OR
Paul J. Duwelius, MD, Portland, OR
Geoffrey S. Tompkins, MD, Santa Rosa, CA
Hsin-Fang Li, PhD, Portland, OR
Tom Lorish, MD, Portland, OR

RTKA is associated with significantly higher costs, lower length of stay, and complication rates. RTKA yielded healthier baseline patients and equivalent functional outcomes.

1:54 PM
PAPER 364
Institution-Wide Adoption of a Preferred Implant Vendor for Total Joint Arthroplasty
Matthew R. Boylan, MD, New York, NY
Anisha Chadda, MHA, New York, NY
James D. Slover, MD, New York, NY
Richard Iorio, MD, Boston, MA
Joseph A. Bosco III, MD, New York, NY

Surgeons voluntarily adopted the institution’s preferred single implant vendor for total joints implant after a contract was signed.

2:00 PM
PAPER 365
Clinical and Cost Efficacy of Formal Allergy Testing for Total Hip Arthroplasty and Total Knee Arthroplasty Patients with Penicillin and Cephalosporin Allergies
Mario Hevesi, MD, Zumbrota, MN
Cody Wyles, MD, Rochester, MN
Miguel Park, MD, Rochester, MN
Douglas R. Osmon, MD, Rochester, MN
Elizabeth Habermann, PhD, MPH, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

Allergy consultation and testing demonstrates clinical and cost effectiveness in clearing potentially penicillin allergic patients for intraoperative cefazolin use.

2:06 PM
PAPER 366
How Much Does a Total Knee Arthroplasty Actually Cost?
Alexander Rondon, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Michael West, CEO, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

Implants account for nearly half of true inpatient costs following TKA. Certain demographic variables and medical comorbidities only modestly increased expenses.

2:18 PM
PAPER 367
The Cost-Effectiveness of Vancomycin Powder for Prevention of Infections After Total Joint Arthroplasty
Anisha R. Sunkerneni, BS, San Jose, CA
Gregory J. Kirchner, BS, Philadelphia, PA
Yehuda E. Kerbel, MD, Philadelphia, PA
Alexander M. Lieber, BA, Philadelphia, PA
Martin Griffis, MD, Philadelphia, PA
Vincent M. Moretti, MD, Philadelphia, PA

This abstract presents a simple break-even formula that any surgeon can use to calculate the cost-effectiveness of locally applied vancomycin powder for the prevention of infection after TJA.

2:24 PM
PAPER 368
Preoperative Opioid Use Increases Cost of Care in Total Joint Arthroplasty
Kerri L. Bell, BA, Philadelphia, PA
Sreeram Penna, MBBS, MRCSED, Bryn Mawr, PA
Carol Foltz, PhD, Philadelphia, PA
Antonia F. Chen, MD, MBA, Newton, MA

Preoperative opioid usage is associated with higher cost of care and length of stay for both TKA and THA.
2:30 PM
PAPER 369
Assessing the Learning Curve of a Contemporary Total Knee System Using Advanced Cumulative Sum Control Chart Analysis
Yifei Dai, PhD, Gainesville, FL
James B. Duke, MD, Ocala, FL
Mark W. Holmanna, MD, Deland, FL
Phillip J. Lewandowskia, MD, Akron, OH
Laurent Angibauda, MS, Gainesville, FL
Charlotte A. Bolch, MS, Gainesville, FL
Matthew Peterson, PhD, Gainesville, FL
J. C. Morrison, MD, Nashville, TN
CUSUM analysis on the learning period of a new TKA system among four surgeons demonstrated a short learning duration. No significant time increase in both during and after learning compared to baseline.

Discussion

2:42 PM
PAPER 370
Reoperation, Revision, and Repeat Revision Rates and the Potential Cost-Utility of Knee Preservation in Young Total Knee Arthroplasty Patients
Mario Hevesi, MD, Zumbrota, MN
Cody Wyles, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Elizabeth Habermann, PhD, MPH, Rochester, MN
Hilal Maradit-Kremers, MD, MSc, Rochester, MN
Aaron J. Krych, MD, Rochester, MN
Daniel B. Saris, MD, PhD, Rochester, MN
Young primary TKA patients demonstrate significantly higher rates of reoperation and serial revision, underscoring the value and potential significant cost savings of preservation-based interventions.

2:48 PM
PAPER 371
Cost Analysis of Medicare Patients with Varying Complexities who Underwent Total Knee Arthroplasty
Nipun Sodhi, BA, Cleveland, OH
Rushabh Vakharia, MD, Fort Lauderdale, FL
Hiba Anis, MD, Cleveland, OH
Assem Sultan, MD, Cleveland, OH
Giles R. Scuderi, MD, New York, NY
Arthur L. Malkani, MD, Louisville, KY
Tsun Yee Law, MD, Fort Lauderdale, FL
Martin W. Roche, MD, Fort Lauderdale, FL
Michael A. Mont, MD, New York, NY
In order to prevent potential disincentives for treating sicker patients, considerations need to be made regarding the costs and reimbursements for these more complex patients.

2:54 PM
PAPER 372
Impact of Opioid Abuse and Dependency on Reimbursements in Patients Undergoing Primary Total Knee Arthroplasty
Rushabh Vakharia, MD, Fort Lauderdale, FL
Nipun Sodhi, BA, Cleveland, OH
Wayne Cohen-Levy, BA, MD, Miami, FL
Tsun Yee Law, MD, Fort Lauderdale, FL
Arthur L. Malikani, MD, Louisville, KY
Michael A. Mont, MD, New York, NY
Martin W. Roche, MD, Fort Lauderdale, FL
With the increasing prevalence of opioid abusers undergoing total knee arthroplasty (TKA), the study illustrates the difference in reimbursements among opioid abusers and non-abusers following TKA.

Discussion

3:06 PM
PAPER 373
A Comparison of Relative Value Units in Revision Hip versus Revision Knee Arthroplasty
Nipun Sodhi, BA, Cleveland, OH
Peter A. Gold, MD, Brooklyn, NY
Luke Garbarino, MD, Bellerose, NY
Sarah E. Dalton, BS, Cleveland Heights, OH
Bilal Mahmood, MD, University Heights, OH
Jared M. Newman, MD, Brooklyn, NY
Assem Sultan, MD, Cleveland, OH
Nicolas S. Pizzi, MD, Shaker Heights, OH
Michael A. Mont, MD, New York, NY
Revision total hip arthroplasty had a significantly higher RVU, length of surgery, and RVU per unit time than revision total knee arthroplasty.

3:12 PM
PAPER 374
Who Should Treat Medically Complex Patients Undergoing Total Knee Arthroplasty?
Lucas Nikkel, MD, Durham, NC
John C. Elfar, MD, Hershey, PA
Michael A. Bergen, BS, Durham, NC
Jonathan D. Byrd, BS, Rochester, NY
William A. Jiranek, MD, Durham, NC
Hospitals that perform a high volume of knee arthroplasty procedures in medically complex patients (Diagnosis-Related Group 469) have lower costs and shorter length of stay.

3:18 PM
PAPER 375
Effect of Early Discharge on Postoperative Comorbidity and Complications for Patients Undergoing Revision Total Knee Arthroplasty
Alex Gu, BS, Washington, DC
Eleanor Gerhard, BS, Hershey, PA
Chapman Wei, BS, Washington, DC
Shane Sobrio, BS, Alexandria, VA
Peter K. Sculco, MD, New York, NY
Alexander S. McLawhorn, MD, MBA, Irvington, NY
Early discharge following revision total knee arthroplasty has largely no difference in postoperative complication development.

Discussion

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
PAPER PRESENTATIONS 376-390

1:30 PM - 3:30 PM

Shoulder and Elbow IV (376-390): Reverse Shoulder Arthroplasty
Moderators: Vani J. Sabesan, MD, Weston, FL and Edward V. Craig, MD, Minneapolis, MN

1:30 PM

Reverse Shoulder Replacement: Incidence Rates, Complications, and Outcomes in 2,638 Patients as Reported by ABOS Part II Candidates from 2005 through 2017
Stephen C. Weber, MD, Silver Spring, MD
Umasuthan SriKumaran, MD, MBA, Ellicott City, MD
Jacob Joseph, BA, Lutherville, MD
Edward G. McFarland, MD, Lutherville, MD

Reverse shoulder arthroplasty as performed by ABOS candidate surgeons had a significantly higher revision and complication rate than has been previously reported for this procedure.

1:36 PM

Primary Reverse Shoulder Arthroplasty Using Contemporary Implants is Associated with Very Low Reoperation Rates
Jason Kang, MD, Rochester, MN
Matthew J. Dubiel, MD, Rochester, MN
Scott P. Steinmann, MD, Rochester, MN
Bassem T. Elhassan, MD, Rochester, MN
Mark E. Morrey, MD, Rochester, MN
Robert H. Cofield, MD, Saint Simons Island, GA
John W. Sperling, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN

Primary RSA performed with contemporary implants and surgical techniques seems to be associated with a very low rate of reoperation.

1:42 PM

Preoperative External Rotation Deficit Does Not Predict Poor Outcomes or Lack of Improvement after Reverse Total Shoulder Arthroplasty
Ira M. Parsons, MD, Portsmouth, NH
Richard J. Friedman, MD, Charleston, SC
Howard D. Routman, DO, Palm Beach Gardens, FL
Christopher Roche, MS, MBA, Gainesville, FL

Patients with preoperative loss of external rotation can still achieve comparable outcomes to those with preserved external rotation function prior to surgery. ER deficit does not predict poor outcome.

2:00 PM

Does Preoperative Diagnosis Affect Your Patients Risk of Opioid Use or Dependence after Reverse Shoulder Arthroplasty?
Vani J. Sabesan, MD, Weston, FL
Arjun Meiyappan, MD, Weston, FL
Ahmed Almansoori, MBBS, Pembroke Pines, FL
Tyler P. Montgomery, BS, Boca Raton, FL
Gregory J. Giol, MD, Davie, FL

Our results demonstrate preoperative diagnosis is a significant contributor to variations in preoperative consumption and this leads to significantly increased risk of postoperative dependence for RSA.

2:06 PM

Does the Transfusion Rate Following Reverse Total Shoulder Arthroplasty Warrant Aggressive Blood Management?
Zachary K. Pharr, MD, Memphis, TN
Baylor Blickenstaff, Memphis, TN
Tyler J. Brolin, MD, Collierville, TN
Richard A. Smith, PhD, Memphis, TN
Frederick M. Azar, MD, Memphis, TN
Thomas (Quin) W. Throckmorton, MD, Germantown, TN

Transfusion occurs eight times more following RTSA for acute trauma or posttraumatic sequela compared to nontraumatic indications. Surgeons may consider aggressive blood management for these patients.

2:18 PM

Reverse Shoulder Arthroplasty has a Higher Risk of Revision Due to Infection than Anatomical Shoulder Arthroplasty
Sahar Moeini, Næstved, Denmark
Jeppe Rasmussen, MD, PhD, Brondby, Denmark
Björn Salomonsson, MD, PhD, Stockholm, Sweden
Erica Domeij Arverud, MD, PhD, Stockholm, Sweden
Randi M. Hole, MD, Bergen, Norway
Steen Lund Jensen, MD, Farsoe, Denmark
Stig Brorson, PhD, Copenhagen, Denmark

The overall incidence of revision due to infection was low. However, specific attention is required on the risk associated with reverse shoulder arthroplasty, especially in men.
2:24 PM | PAPER 383
Outcomes of Reverse Total Shoulder Arthroplasty: With and Without Subscapularis Repair
Howard D. Routman, DO, Palm Beach Gardens, FL
Richard J. Friedman, MD, Charleston, SC
Pierre-Henri Flurin, MD, Merignac, France
Thomas W. Wright, MD, Gainesville, FL
Christopher Roche, MS, MBA, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY

Subscapularis repair did not impact dislocation rate in rTSA, but did result in worse active external rotation and abduction. Internal rotation was improved with subscapularis repair at 74 months.

2:30 PM | PAPER 384
Acromial and Scapular Problems after Reverse Shoulder Arthroplasty: Analysis of 3,561 Patients with a Single Implant
Howard D. Routman, DO, Palm Beach Gardens, FL
Richard J. Friedman, MD, Charleston, SC
Pierre-Henri Flurin, MD, Merignac, France
Thomas W. Wright, MD, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY
Christopher Roche, MS, MBA, Gainesville, FL

Analysis of acromial and scapular problems after 3,555 rTSA with a single implant system demonstrated that the only variable associated with fracture was the number of screws used in the baseplate.

2:42 PM | PAPER 385
Acromial Stress Fracture following Reverse Total Shoulder Arthroplasty: Incidence and Predictors
Benjamin Zmistowski, MD, Philadelphia, PA
Michael Gutman, BA, Chicago, IL
Yael Horvath, Philadelphia, PA
Joseph A. Abboud, MD, Philadelphia, PA
Gerald R. Williams, MD, Philadelphia, PA
Surena Namdari, MD, MSc, Philadelphia, PA

Acromial stress fracture is not an infrequent complication of reverse total shoulder arthroplasty. Patients with fixed proximal migration appear to have an increased risk.

2:48 PM | PAPER 386
Coracoacromial Ligament Transection Increases Scapular Spine Strains Following Reverse Total Shoulder Arthroplasty
Samuel A. Taylor, MD, New York, NY
Andreas Kontaxis, PhD, New York, NY
Xiang Chen, MS, New York, NY
Joseph Gentile, MD, Davidson, NC
Joshua S. Dines, MD, New York, NY
David M. Dines, MD, Uniondale, NY
Frank A. Cordasco, MD, New York, NY
Russell F. Warren, MD, New York, NY
Lawrence V. Gulotta, MD, New York, NY

Transection of the CAL increases scapular spine strain following RSA. CAL preservation is a modifiable risk factor that may reduce the risk of scapular spine fractures.

2:54 PM | PAPER 387
Survivorship of Onlay-Type Reverse Total Shoulder Arthroplasty at Midterm Follow Up
Ryan Rauck, MD, New York, NY
Eric P. Eck, Oak Lawn, IL
Evan O'Donnell, MD, New York, NY
Brenda Chang, MPH, MS, New York, NY
Edward V. Craig, MD, Minneapolis, MN
Joshua S. Dines, MD, New York, NY
David M. Dines, MD, Uniondale, NY
Russell F. Warren, MD, New York, NY
Lawrence V. Gulotta, MD, New York, NY

Mid-term survivorship after reverse shoulder arthroplasty is high and RSA performed in native shoulders have lower rates of revision at mid-term follow up.

3:06 PM | PAPER 388
Posterior Rotator Cuff Fatty Infiltration Does Not Influence Patient Outcomes After Lateralized Reverse Shoulder Arthroplasty
Adam Kwapisz, PhD, MD, Lodz, Poland
Charles A. Thigpen, PhD, PT, Greenville, SC
Jason P. Rogers, MD, Greensboro, NC
Kyle J. Adams, BS, Clemson, SC
Ellen Shanley, PhD, PT, Greer, SC
Ryan Alexander, BS, Greenville, SC
Richard J. Hawkins, MD, Naples, FL
John M. Tokish, MD, Scottsdale, AZ
Michael J. Kissenberth, MD, Simpsonville, SC

This study investigates the influence of teres minor and infraspinatus fatty infiltration on the postoperative range of motion and patient outcomes in lateralized glenoid reverse shoulder arthroplasty.

3:12 PM | PAPER 389
Teres Minor Muscle Hypertrophy and Deltoid Muscle Fatty Infiltration are Independent Negative Predictors of Outcomes after Reverse Total Shoulder Arthroplasty
Li-Wei Hung, MD, San Francisco, CA
Austin W. Lee, BA, San Francisco, CA
Weiyouan Xiao, San Francisco, CA
Alan Zhang, MD, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA
ChunBong B. Ma, MD, San Francisco, CA
Drew Lansdown, MD, San Francisco, CA

Teres muscle hypertrophy and deltoid muscle fatty infiltration are negative predictors of outcome after reverse total shoulder arthroplasty.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
3:18 PM  
PAPER 390
Revision of a Failed Anatomic Arthroplasty to Reverse Total Shoulder Arthroplasty
Mihir M. Sheth, BS, Plainsboro, NJ
Daniel Sholder, BS, New Orleans, LA
Joseph A. Abboud, MD, Philadelphia, PA
Mark D. Lazarus, MD, Philadelphia, PA
Matthew L. Ramsey, MD, Philadelphia, PA
Gerald R. Williams, MD, Philadelphia, PA
Surena Namdari, MD, MSc, Philadelphia, PA

This study presents clinical outcomes for 110 patients who underwent reverse total shoulder arthroplasty following a failed anatomic arthroplasty at a minimum two-year follow up (mean, 4.8 years).

Discussion

1:30 PM - 3:30 PM  
PAPER PRESENTATIONS 391-405
Palazzo Ballroom J
Sports Medicine IV (391-405): Hip
Moderators: Eric J. Kropf, MD, Philadelphia, PA and Edward R. McDevitt, MD, Annapolis, MD

1:30 PM  
PAPER 391
Joint tissue integrity at the time of femoroacetabular impingement surgery impacts clinical outcomes
Giovanni Trisolino, MD, Bologna
Marta Favero, Padova, Italy
Dante Dallari, MD, Bologna, Italy
Enrico Tassinari, MD, Bologna, Italy
Steven R. Goldring, MD, New York, NY
Mary B. Goldring, PhD, New York, NY
Miguel Otero, PhD, New York, NY
Roberta Ramonda, Padova, Italy
Stefano Stilli, MD, Bologna, Italy
Brunella Grigolo, MD, Bologna, Italy
Eleonora Olivotto, PhD, Bologna, Italy
Early Osteoarthritis Study Group

This study provides evidence that labral matrix integrity plays a role in preoperative and postoperative hip symptoms, representing a rational target for novel therapeutic strategies.

1:36 PM  
PAPER 392
Best Practice Guidelines for Hip Arthroscopy in Femoroacetabular Impingement: Results of a Delphi Process
Thomas S. Lynch, MD, New York, NY
Anas Minkara, BS, New York, NY
Stephen K. Aoki, MD, Salt Lake City, UT
Asheesh Bedi, MD, Ann Arbor, MI
Srino Bharam, MD, New York, NY
John C. Clohisy, MD, St. Louis, MO
Joshua D. Harris, MD, Houston, TX
Christopher M. Larson, MD, Edina, MN
Jeffrey J. Nepple, MD, St. Louis, MO
Shane J. Nho, MD, Chicago, IL
Marc J. Philippou, MD, Vail, CO
James T. Rosneck, MD, Chagrin Falls, OH
Marc R. Safran, MD, Redwood City, CA
Allston J. Stubbs, MD, Winston-Salem, NC
Robert W. Westermann, MD, Iowa City, IA
J. W. Thomas Byrd, MD, Nashville, TN
Delphi Hip Arthroscopy Group

The validated Delphi process, driven by a peer-reviewed systematic review and meta-analysis, was utilized to obtain consensus among 15 surgeons for hip arthroscopy in femoroacetabular impingement.

1:42 PM  
PAPER 393
A Double-Blind, Randomized Controlled Trial Comparing Platelet-Rich Plasma versus Hyaluronic Acid for Early Osteoarthritis of the Hip Joint
Matthew J. Kraeutler, MD, Cedar Grove, NJ
Shannon L. Miller, Boulder, CO
Darby A. Houck, Boulder, CO
Omer Mei-Dan, MD, Boulder, CO

Intra-articular hip injections of PRP result in significantly improved symptoms and function for patients with early hip OA, though further study is needed to determine the efficacy of HA injections.

Discussion

1:54 PM  
PAPER 394
Physical Activity During Adolescence and the Development of Cam Morphology: A Longitudinal Cohort Study of 228 Elite Soccer Players and Controls Aged 9-18
Scott J. Fernquest, BA, MBBS, Oxford, United Kingdom
Antony Palmer, MA, BMBC, Oxford, United Kingdom
Mo Gimpel, Southampton, United Kingdom
Richard J. Birchall, MSc, Southampton, United Kingdom
John A. Broomfield, Oxford, United Kingdom
Thamindu Wedatilake, MBCHB, MSc, Oxford, United Kingdom
Thomas Lloyd, Oxford, United Kingdom
Andrew J. Carr, FRCS, Headington, Oxford, United Kingdom
Sion Glyn-Jones, MA MBBS, Oxford, United Kingdom

This longitudinal cohort study of 228 adolescent elite athletes and controls provides insight into risk factors for developing FAI, its pathogenesis, and informs timing of intervention in FAI.
2:00 PM  PAPER 395
Gender Differences in Outcome after Corrective Surgery for Femoroacetabular Impingement (FAI) Reflect Differences in Preoperative Baseline Scores
Tristan Maerz, PhD, Ann Arbor, MI
Geneva Baca, St. Louis, MO
Paul E. Beaule, MD, Ottawa, ON, Canada
John C. Clohisy, MD, St. Louis, MO
Young Jo Kim, MD, PhD, Boston, MA
Christopher M. Larson, MD, Edina, MN
Michael B. Millis, MD, Boston, MA
David A. Podeszwa, MD, Dallas, TX
Perry L. Schoenecker, MD, St. Louis, MO
Rafael J. Sierra, MD, Rochester, MN
Ernest L. Sink, MD, New York, NY
Daniel J. Sucato, MD, MS, Dallas, TX
Robert T. Trousdale, MD, Rochester, MN
Ira Zaltz, MD, Royal Oak, MI
Asheesh Bedi, MD, Ann Arbor, MI
ANCHOR Multicenter Study Group

In a large, multi-center, prospective cohort of FAI, gender differences can be traced to preoperative baseline scores.

2:06 PM  PAPER 396
Changes in Bony Morphology in 16 Youth Asymptomatic Hockey Players over Three Consecutive Years
Brendan T. Higgins, MD, Avon, CO
Charles P. Ho, MD, PhD, Vail, CO
Ioanna Bolia, MD, MSc, Vail, CO
Karen K. Briggs, MPH, Vail, CO
Marc J. Philippon, MD, Vail, CO

There was an increase in alpha angle, FABER distance, loss of hip internal rotation, and prevalence of labral and cartilage lesions over three years in young hockey players.

2:18 PM  PAPER 397
Lateral Center Edge Angle is Not Predictive of Acetabular Articular Cartilage Surface Area: Anatomic Variation of the Lunate Fossa
Thai Q. Trinh, MD, Blacklick, OH
Michael Leunig, PhD, Zurich, Switzerland
Christopher M. Larson, MD, Edina, MN
John C. Clohisy, MD, St. Louis, MO
Jeffrey J. Nepple, MD, St. Louis, MO
Ira Zaltz, MD, Royal Oak, MI
Micah Naimark, MD, Ann Arbor, MI
Asheesh Bedi, MD, Ann Arbor, MI

The LCEA did not correlate with articular surface area in patients without radiographic evidence of hip dysplasia, and is not a reliable surrogate of acetabular articular cartilage surface area.

2:24 PM  PAPER 398
Hip Dysplasia and Acetabular Overcoverage Negatively Affect Long-Term Outcome at 15-Year Follow Up after Open Cam Resection for Early Treatment of Cam-Femoroacetabular Impingement
Till D. Lerch, MD, Bern, Switzerland
Inga Todorski, MD, Bern, Switzerland
Florian Schmaranzer, MD, Bern, Austria
Simon D. Steppacher, MD, Bern, Switzerland
Moritz Tannast, Bern, Switzerland
Klaus Siebenrock, MD, Bern, Switzerland

Preoperative hip dysplasia, acetabular overcoverage, female sex, and preoperative age > 40 years negatively affect the long-term outcome at 15-year follow up after open treatment for cam-FAI.

2:30 PM  PAPER 399
Arthroscopic Treatment of Acetabular Retroversion with Acetabuloplasty and Subspine Decompression: A Matched Cohort Analysis
Alan Zhang, MD, San Francisco, CA
Sergio E. Flores, BS, San Francisco, CA
Caitlin Chambers, MD, San Francisco, CA
KR Borak, BA, San Francisco, CA

Arthroscopic treatment of acetabular retroversion, including subspine decompression, is safe and provides significant clinical improvement similar to arthroscopic treatment for pincer-type FAI.

2:42 PM  PAPER 400
Hip Specific Patient Reported Sports Medicine Outcomes Scores Decrease in an Age Dependent Manner
Zachary Sharfman, MD, MS, Bronx, NY
Nathan A. Safran, Stanford, CA
Ran Atzmon, MD, Be’er Ya’akov, Israel
Hal D. Martin, DO, Dallas, TX
Oleg Dolkart, PhD, Tel Aviv, Israel
Eyal Amar, MD, Tel Aviv, Israel
Ehud Rath, MD, Rehovot, Israel

Patient reported outcomes decrease in an age dependent manner even in individuals without previous hip pathology or surgery.

2:48 PM  PAPER 401
Indications for Revision Hip Arthroscopy and Comparative Outcomes Between Primary and Revision Arthroscopy Patients
Austin V. Stone, MD, PhD, Lexington, KY
William Neal, Chicago, IL
Philip Malloy, MPT, Chicago, IL
Nicole A. Friel, MD, Chicago, IL
Edward Beck, MPH, Chicago, IL
Shane J. Nho, MD, Chicago, IL

This study identified the primary reason for revision hip arthroscopy is residual FAI deformity and capsular insufficiency, and that PROs were similar to patients in the primary hip arthroscopy cohort.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Four-Year Outcomes Following Arthroscopic Microfracture of the Hip  

**Benjamin Kester, MD, New York, NY**  
John Begly, MD, New York, NY  
Brian Capogna, MD, Birmingham, AL  
Kristofer E. Chenard, MD, New York, NY  
Thomas Youm, MD, New York, NY

Clinical improvements are seen four years following microfracture treatment of chondral lesions of the hip. However, risk of procedural failure is high and patients may require future operations.

**Discussion**

Converting from an Interportal to a T-Capsulotomy: The Effects of Capsulotomy Size, Type, and Subsequent Repair on the Biomechanics of Hip Distraction  

**Alexander Weber, MD, Los Angeles, CA**  
William Neal, Chicago, IL  
Erik Mayer, BS, Los Angeles, CA  
**Edward Beck, MPH, Chicago, IL**  
Benjamin Kuhns, MD, Rochester, NY  
Elizabeth Shewman, MS, Chicago, IL  
Michael J. Salata, MD, Cleveland, OH  
Richard C. Mather, MD, Durham, NC  
Shane J. Nho, MD, Chicago, IL

This study showed when performing interportal or T-capsulotomy, the ILFL strength is significantly decreased, but complete capsular repair can restore joint stability to the native, intact hip.

**Discussion**

Can I Drive Doc? Driving after Hip Arthroscopy  

**Suenghwan Jo, MD, PhD, Gwangju, Republic of Korea**  
Sang-Hong Lee, MD, Kwangju, Republic of Korea  
Chaewon Lim, Gwangju, Republic of Korea  
Young Wook Kim, Gwangju, Republic of Korea  
Jae Hwan Lim, MD, Gwang-Ju, Republic of Korea  
Jung Woo Lee, MD, Gwangju, Republic of Korea  
Chul Lee, MD, Gwangju, Republic of Korea  
**Elizabeth Cody, MD, Durham, NC**  
Lorena Bejarano-Pineda, MD, Durham, NC  
James R. Lachman, MD, Durham, NC  
Michel A. Taylor, MD, Toronto, ON, Canada  
Elizabeth Gausden, MD, New York, NY  
James K. DeOrio, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James A. Nunley, MD, Durham, NC

Our study indicates that in the simple hip arthroscopy, the patient can return to driving after two weeks and even after complex surgery, three weeks will provide enough time to regain acceptable driving performance.

**Discussion**

Narcotics Prescribing Education Program and Standardized Service Guidelines Decrease Postoperative Opioid Prescribing after Hip Arthroscopy  

**Jeffrey G. Stepan, MD, MSc, New York, NY**  
Michael Fu, MD, MS, New York, NY  
Francis Lovecchio, MD, New York, NY  
Ajay Premkumar, MD, MPH, New York, NY  
Danyal Nawabi, MD, FRCS (Orth), New York, NY  
Anil S. Ranawat, MD, New York, NY  
Bryan T. Kelly, MD, New York, NY

A pilot narcotics prescribing education program in combination with published guidelines led to significant decreases in opioid prescriptions following hip arthroscopy.

**Discussion**

Risk Factors for Early Failure of Total Ankle Arthroplasty in 506 Patients with a Minimum Five Years of Follow Up  

**Elizabeth Cody, MD, Durham, NC**  
Lorena Bejarano-Pineda, MD, Durham, NC  
James R. Lachman, MD, Durham, NC  
Michel A. Taylor, MD, Toronto, ON, Canada  
Elizabeth Gausden, MD, New York, NY  
James K. DeOrio, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James A. Nunley, MD, Durham, NC

The only independent predictors of early implant failure were presence of hindfoot fusion and use of an earlier generation stemmed prosthesis.

**Discussion**

A Comparison of Cyst Formation and Management in Mobile-Bearing and Fixed-Bearing Total Ankle Arthroplasty  

**James R. Lachman, MD, Durham, NC**  
Elizabeth Cody, MD, Durham, NC  
Michel A. Taylor, MD, Toronto, ON, Canada  
Daniel J. Scott, MBA, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  
James A. Nunley, MD, Durham, NC

This study compares the incidence of cyst formation, management, and patient reported outcomes between mobile-bearing and fixed-bearing total ankle arthroplasty.
1:42 PM  
PAPER 408  
Patient Reported Outcomes Before and After Primary and Revision Total Ankle Arthroplasty: A Longitudinal Study of 29 Patients  
James R. Lachman, MD, Durham, NC  
Jania A. Ramos, Fort Lauderdale, FL  
Samuel B. Adams, MD, Durham, NC  
James A. Nunley, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  

This study follows 29 patients who underwent primary total ankle arthroplasty (TAA) at the host institution and subsequently required revision TAA. Patient reported outcomes are reviewed.

Discussion

1:54 PM  
PAPER 409  
Periprosthetic Ankle Fractures: Developing an Algorithm for Management  
Alexander L. Lazarides, MD, Durham, NC  
Tyler J. Vvosos, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  
James A. Nunley, MD, Durham, NC  
Samuel B. Adams, MD, Durham, NC  

The majority of fractures about a stable TAR required operative intervention. Nonoperative management is fraught with a high rate of subsequent surgical intervention.

2:00 PM  
PAPER 410  
The Impact of Concomitant Low-Back Pain on Functional Outcomes for Ankle Arthritis Treated with Total Ankle Arthroplasty  
Michael Symes, MBBS, Annandale, Australia  
Mario Escudero, MD, Santiago, Chile  
Murray J. Penner, MD, Vancouver, BC, Canada  
Kevin J. Wing, MD, Vancouver, BC, Canada  
Andrea Veljkovic, MD, FRCS, Vancouver, BC, Canada  
Alastair S. E. Younger, MD, Vancouver, BC, Canada  

Total ankle arthroplasty in patients with concomitant low-back pain results in worse functional outcomes.

Discussion

2:06 PM  
PAPER 411  
The Effect of Patient Characteristics on Intermediate to Long-Term Outcomes after Total Ankle Arthroplasty  
Daniel J. Cunningham, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  
James A. Nunley, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
Samuel B. Adams, MD, Durham, NC  

Smoking, obesity, prior surgery, and rheumatoid arthritis are associated with negative impacts on patient-reported 2-10 year outcomes after total ankle arthroplasty.

Discussion

2:18 PM  
PAPER 412  
Economic Impact of Comorbidity Burden in Total Ankle Arthrodesis and Ankle Arthroplasty  
Jimmy J. Chan, MD, Scarsdale, NY  
Jesse Chan, Scarsdale, NY  
Jashvant Poeran, MD, PhD, New York, NY  
Nicole Zubizarreta, MPH, New York, NY  
Madhu Mazumdar, PhD, NYC, NY  
Leesa M. Galatz, MD, New York, NY  
Ettore Vulcano, MD, Long Island City, NY  

Nationwide database demonstrates that increased comorbidity burden is associated with increased cost of hospitalization, LOS, complications, and opioid utilization in TAA and ankle arthrodesis.

2:24 PM  
PAPER 413  
Changing the Joint Line in Total Ankle Arthroplasty: The Patient Perspective  
James R. Lachman, MD, Durham, NC  
Michel A. Taylor, MD, Toronto, ON, Canada  
James A. Nunley, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  

This study explores the consequences of elevating or lowering the joint line in total ankle arthroplasty.

2:30 PM  
PAPER 414  
Fatigue Strength of Highly Crosslinked Polyethylene in Total Ankle Arthroplasty  
Jeffrey Bischoff, PhD, Warsaw, IN  
Justin S. Hertzler, MS, Warsaw, IN  
Mehul Dharia, MSME, Warsaw, IN  
Oliver Schipper, MD, Arlington, VA  

Total ankle arthroplasty designs that utilize HXLPE may have sufficient fatigue strength to withstand the demands of the ankle.

Discussion

2:42 PM  
PAPER 415  
Results of Tibia and Fibula Osteotomies in the Setting of Total Ankle Replacement  
Samuel B. Adams, MD, Durham, NC  
John Steele, Durham, NC  
Travis J. Dekker, MD, Durham, NC  
Constantine A. Demetracopoulos, MD, New York, NY  
James A. Nunley, MD, Durham, NC  
Mark E. Easley, MD, Durham, NC  
James K. DeOrio, MD, Durham, NC  

This study demonstrated successful utilization of tibia, fibula, or combined tibia and fibula osteotomies at the time of TAR in order to gain neutral ankle alignment.
2:48 PM  PAPER 416
**Patients at Risk for Exceeding Comprehensive Care for Joint Replacement Cost Targets After Total Ankle Arthroplasty**  
*Daniel Goltz, MBA, MD, Durham, NC*  
*Sean P. Ryan, MD, Durham, NC*  
*Claire B. Howell, Durham, NC*  
*Mark E. Easley, MD, Durham, NC*  
*Thorsten M. Seyler, MD, PhD, Durham, NC*  
*Samuel B. Adams, MD, Durham, NC*

High volume TAA centers still substantially exceed CJR target costs in up to 10% of cases, with discharge location and readmission expenses driving the majority of these events.

2:54 PM  PAPER 417
**Outcome of Oblique Supramalleolar Osteotomy without Fibular Osteotomy for Congruent and Incongruent Type Varus Ankle Arthritis**  
*Jaewan Suh, MD, Cheonan, Republic of Korea*  
*Kwang Hwan Park, MD, Seoul, Republic of Korea*  
*Jai Bum Kwon, MD, Seoul, Republic of Korea*  
*Jin Woo Lee, MD, Seoul, Republic of Korea*  
*Seung Hwan Han, MD, Seoul, Republic of Korea*

The oblique supramalleolar osteotomy without fibular osteotomy was a good treatment option for congruent and incongruent early to mid-stage varus ankle osteoarthritis.

3:06 PM  PAPER 418
**Differences in Gait and Stair Ascent after Ankle Arthrodesis and Total Ankle Arthroplasty**  
*Andrew Kraszewski, New York, NY*  
*Guilherme Honda Saito, MD, São Paulo, Brazil*  
*Howard J. Hillstrom, PhD, New York, NY*  
*Robin M. Queen, PhD, Blacksburg*  
*Scott Ellis, MD, New York, NY*  
*Constantine A. Demetracopoulos, MD, New York, NY*

Through gait analysis, we show ankle replacement patients performed differently than arthrodesis during walking and stair ascent, where replacement patients had greater ankle push-off power.

3:12 PM  PAPER 419
**Projections for Total Ankle Arthroplasty based upon the National Inpatient Sample**  
*Justin M. Rabinowitz, MD, Charleston, SC*  
*Elizabeth C. Durante, BA, BS, Charleston, SC*  
*Michael Hale, Miami Beach, FL*  
*Christopher E. Gross, MD, Charleston, SC*

There is projected to be a significant increase in demand for total ankle arthroplasty due to improved techniques, implants, and long-term clinical outcomes.

3:18 PM  PAPER 420
**Mobility Limitation is Greater after Surgery for Degenerative Pathology of the Ankle, Hindfoot, and Midfoot than Total Hip Arthroplasty**  
*Gregory Kurkis, MD, Atlanta, GA*  
*Amlie Erwood, BS, Atlanta, GA*  
*Samuel D. Maidman, BA, Atlanta, GA*  
*Thomas L. Bradbury, MD, Atlanta, GA*  
*Shay A. Tenenbaum, MD, Herzliya, Israel*  
*Jason T. Bariteau, MD, Atlanta, GA*

This study uses the Life Space Assessment to show that recovery of mobility is longer after surgery for degenerative ankle, hindfoot, and midfoot conditions compared to total hip arthroplasty.
SYMPOSIA

4:00 PM - 6:00 PM
Palazzo Ballroom E

I. Meniscus Management in 2019 – Debridement, Repair, Root Repair, and Transplantation: A Case-Based Approach
Moderator: Brian J. Cole, MD, MBA, Chicago, IL
The goal of this symposium is to provide a comprehensive overview of the utilization of different techniques for meniscus pathology including debridement, repair, root repair, and transplantation, with an evidence-based approach focusing on the cost-effectiveness and value of all available surgical approaches.

I. Meniscectomy – When Is It Enough
Jorge Chahla, MD, PhD, Santa Monica, CA

II. Meniscus Transplantation – Who Should Get This, and What About Athletes
Rachel M. Frank, MD, Boulder, CO

III. No Medial Meniscus and Varus Alignment – Osteotomy Alone, or add MAT
Alan Getgood, MD, FRCS (Ortho), London, ON, Canada

IV. When to Incorporate Orthobiologics
Bert Mandelbaum, MD, Santa Monica, CA

V. Meniscus Repair – All-Inside Versus Inside-Out
Matthew T. Provencher, MD CAPT MC USNR, Vail, CO

Room 4401

J. Korean Perspective of Arthroscopic Surgery: Upper and Lower Extremity

Moderators: Yong-Girl Rhee, MD, Seoul, Republic of Korea and Anthony A. Romeo, MD, Chicago, IL

All arthroscopic management of complex rotator cuff tear, recurrent shoulder instability with critical glenoid bone loss, stiff elbow and bone graft for scaphoid nonunion. This symposium is a collaboration between AAOS and the 2019 Guest Nation of Republic of Korea.

I. How to Enhance Rotator Cuff Healing? Basic and Clinical Research/Treatment of Stiff Elbow: Arthroscopic and Open Treatment
In-Ho Jeon, MD, PhD, Seoul, Republic of Korea

II. How to Handle the Complex Rotator Cuff Tear?
Yang-Soo Kim, MD, Seoul, Republic of Korea

III. The Clinical Result of Arthroscopic Bone Grafting and Percutaneous K-Wires Fixation for Management of Scaphoid Nonunions
Young Keun Lee, PhD, Jeonju, Republic of Korea

IV. How to Enhance Rotator Cuff Healing? Basic and Clinical Research
Joo Han Oh, Seoul, Republic of Korea

V. Arthroscopic Stabilization Procedures in Patients with a Critical Glenoid Bone Loss
Sang-Jin Shin, MD, Seoul, Republic of Korea

INSTRUCTIONAL COURSE LECTURES

4:00 PM - 6:00 PM

261. Primary Total Hip Arthroplasty: Everything You Need to Know
Moderator: J. Bohannon Mason, MD, Charlotte, NC
David Beverland, MD, Belfast, Ireland
David F. Dalury, MD, Baltimore, MD
William L. Griffin, MD, Charlotte, NC

Room 4105

Course presenters review preoperative and postoperative strategies to improve outcomes, component preparation and implantation techniques (video demonstrations), and bearing surface selection.

262. Tips and Tricks to Save You During Revision Total Knee Arthroplasties: Video-Based Demonstrations
Moderator: Matthew P. Abdel, MD, Rochester, MN
John J. Callaghan, MD, Iowa City, IA
Arlen D. Hanssen, MD, Rochester, MN
R. Michael Meneghini, MD, Fishers, IN

Room 2201

This ICL will provide the latest information on managing patients with failed TKAs that require complex exposures, metaphyseal fixation to manage bone loss and improve biologic fixation, intraoperative infection management, and extensor mechanism reconstructions.

263. Forefoot Success
Moderator: William M. Granberry, MD, Houston, TX
Richard M. Marks, MD, Mobile, AL
Jeremy J. McCormick, MD, Chesterfield, MO

Room 3504

The course presents a review of forefoot conditions from metatarsalalgia to hallux valgus. This will include mechanics of disease, results of reconstructions and emerging technologies.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Non-operative Management of Osteoarthritis (OA) of the Knee: What Should You be Injecting Now and in the Future

Moderator: John C. Richmond, MD, Boston, MA
Jack M. Bert, MD, Woodbury, MN
Jason L. Dragoo, MD, Redwood City, CA
Andrew I. Spitzer, MD, Beverly Hills, CA

Injection therapy for the treatment of osteoarthritis of the knee is very controversial. This ICL will give participants the best information in 2019.

Evaluation and Management of Common Hand and Wrist Conditions for the General Orthopaedic Surgeon

Moderator: Steven D. Maschke, MD, Chagrin Falls, OH
Nathan G. Everding, MD, Manlius, NY
Xavier C. Simcock, MD, Somerville, MA

This course provides a review of common hand and wrist conditions for the general orthopaedic surgeon, including appropriate evaluation and management.

The Debate is On – Discussing the Controversies Surrounding Pediatric Fracture Care

Moderator: Joshua M. Abzug, MD, Timonium, MD
K. Brighton, MD, Charlotte, NC
Aristides I. Cruz, MD, Walpole, MA
Christine A. Ho, MD, Dallas, TX

This course presents both sides of some controversies following common fractures in children. Treatment strategies for the fractures are presented as well as ways to avoid complications. Teaching methods include evidence-based discussion for the controversies.

The Future of Orthopaedic Practice: Which Practice Models will Remain Viable?

Moderator: Robert A. Butler, MD, Starkville, MS
Gregory Jeansonne, MD, Kingsport, TN
Wendell Heard, MD, New Orleans, LA
Wade Van Sice, MD, Jupiter, FL

Healthcare reform will have a direct effect on orthopaedics. Hear from successful colleagues in a variety of practice settings about how they plan to survive and thrive.

From A to P: Technical Pearls to Master Shoulder Instability Surgery!

Moderator: William N. Levine, MD, New York, NY
George Athwal, MD, London, ON, Canada
Eric C. Makhni, MD, MBA, West Bloomfield, MI
Felix Savoie, MD, New Orleans, LA

This technique-based ICL will focus entirely on technical pearls and skills for mastering shoulder instability surgery, for both open and arthroscopic cases.

Looking Beyond the Curve: Classification and Treatment of Spinal Deformity in the Orthopaedic Clinic

Moderator: John R. Dimar II, MD, Louisville, KY
Lawrence L. Haber, MD, Woodbury, MN
James O. Sanders, MD, Rochester, NY
Paul D. Sponseller, MD, Baltimore, MD

This course covers the unique problems associated with spinal deformities including achondroplasia, Down syndrome, neurofibromatosis, Marfan and Ehlers-Danlos syndromes, osteogenesis, and other miscellaneous syndromes.

Mini-Review of Sports Medicine Lower Extremity

Moderator: Volker Musahl, MD, Pittsburgh, PA
Geoffrey S. Baer, MD, Madison, WI
Asheesh Bedi, MD, Ann Arbor, MI
Fotios P. Tjoumakaris, MD, Ocean View, NJ

This course will provide a review of relevant topics in sports medicine lower extremity injuries, including hip pathology, ligamentous knee injuries, and ankle sports injuries.

The Management of Meniscal Pathology: From Partial Meniscectomy to Transplantation

Moderator: Laith M. Jazrawi, MD, New York, NY
Philip Davidson, MD, Salt Lake City, UT
Eric Strauss, MD, Scarsdale, NY

This instructional course lecture provides a focused consolidation of expert lectures on current diagnoses and management of meniscus pathology and treatment.

Periprosthetic Fractures Around the Hip and Knee: Contemporary Techniques of Internal Fixation and Revision

Moderator: Erik Kubiak, MD, Las Vegas, NV
Cory Collinge, MD, Nashville, TN
George J. Haidukewych, MD, Orlando, FL
Christopher E. Pelt, MD, Salt Lake City, UT

Contemporary indications and techniques of internal fixation and revision for periprosthetic fractures around total hip and total knee arthroplasty are presented.

The Not-So-Simple Ankle Fracture: Avoiding Problems and Pitfalls to Improve Patient Outcome

Moderator: Julius A. Bishop, MD, Palo Alto, CA
William W. Cross, MD, Rochester, MN
David J. Dalstrom, MD, San Diego, CA
Michael Githens, MD, Seattle, WA

Focusing on four themes, challenges to care for the rotational ankle fracture are highlighted and tips for management are provided.
The Failed Reverse Shoulder Arthroplasty: Step-by-Step Approach to Revision; How the Experts Think: A Case-Based Instructional Course Lecture

Moderator: Joseph A. Abboud, MD, Philadelphia, PA
Pascal Boileau, MD, Nice, France
Bassem T. Elhassan, MD, Annecy, France
Mark A. Franklin, MD, Temple Terrace, FL
Laurent Lafosse, MD, Annecy, France
Mark D. Lazarus, MD, Philadelphia, PA
Jonathan Levy, MD, Fort Lauderdale, FL
Anand M. Murthy, MD, Baltimore, MD
Howard D. Routman, DO, Palm Beach Gardens, FL
Laurent Lafosse, MD, Annecy, France
Mark D. Lazarus, MD, Philadelphia, PA
Jonathan Levy, MD, Fort Lauderdale, FL
Anand M. Murthy, MD, Baltimore, MD

This is a case-based instructional course designed to allow the attendee to learn from world-renowned experts about the thought processes they implement when performing revision reverse shoulder arthroplasty.

Minimally Invasive Surgery versus Standard Open Techniques in the Lumbar Spine: Indications, Contraindications, and Controversies

Moderator: Michael D. Daubs, MD, Las Vegas, NV
Neel Anand, MD, Los Angeles, CA
Darrel S. Brodke, MD, Salt Lake City, UT
Norman Chutkan, MD, Phoenix, AZ
John C. France, MD, Morgantown, WV
Brandon D. Lawrence, MD, Salt Lake City, UT
Robert W. Molinari, MD, Pittsford, NY
Alpesh A. Patel, MD, Chicago, IL
Kern Singh, MD, Chicago, IL
Seth K. Williams, MD, Madison, WI

Learn state of the art indications and contraindications for MIS versus open techniques in the lumbar spine through case presentations and faculty and participant discussions.

4:00 PM - 6:00 PM

4:00 PM  PAPER 421

Does Early Antibiotic Administration Influence Union Rate in Open Tibia Fractures?

Ryan Mayer, MD, Lexington, KY
David Zuelzer, MD, Lexington, KY
Adam Akbar, Chapel Hill, NC
Christopher B. Hayes, MD, MS, Sacramento, CA
Cale Jacobs, PhD, Lexington, KY
Arun Anjea, MD, Lexington, KY
Raymond D. Wright, MD, Lexington, KY
Eric S. Moghadamian, MD, Lexington, KY
Paul E. Matuszewski, MD, Lexington, KY

The time from injury to antibiotics in patients that underwent initial external fixation for type I, II, and IIIA open tibia shaft fractures was associated with septic nonunion.

4:06 PM  PAPER 422

Delay of Antibiotics Greater than Two Hours Predicts Surgical Site Infection in Open Fractures

Joseph Patterson, MD, San Francisco, CA
Erika Roddy, MD, San Francisco, CA
Utku Kandemir, MD, San Francisco, CA

Delay of antibiotics greater than two hours from presentation of an open fracture was associated with 90 day surgical site infection after Cox adjustment for fracture grade, drug use, and smoking.

4:12 PM  PAPER 423

Effect of Greater Prophylactic Antibiotic Duration in the Treatment of Open Fracture Wounds Differs by Level of Contamination

Christina A. Stennett, MPH, Baltimore, MD
Nathan N. O’Hara, Baltimore, MD
Sheila Sprague, PhD, Hamilton, ON, Canada
Kyle J. Jeray, MD, Greenville, SC
Brad Petrisor, MD, Hamilton, ON, Canada
Mohit Bhandari, MD, FRCSC, Hamilton, ON, Canada
Gerard Slobogean, MD, MPH, Baltimore, MD

In this study, longer antibiotic duration was found to have a strong protective effect against surgical site infections in open fracture wound patients with severe contamination.

4:24 PM  PAPER 424

Timing of Definitive Fixation with Respect to Flap Coverage in Open Tibia Fractures

Paul Tornetta III, MD, Boston, MA
Casey Kuripia, MD, Boston, MA
Justin J. Koh, MD, Boston, MA
Lisa K. Cannada, MD, Jacksonville, FL
Peter C. Krause, MD, New Orleans, LA
Andrew J. Marcantonio, DO, Wellesley, MA
Hassan R. Mir, MD, MBA, Tampa, FL
Saam Morshed, MD, San Francisco, CA
Brian Mullis, MD, Zionsville, IN
Heather A. Vallier, MD, Cleveland, OH
Jerald Westberg, BA, Minneapolis, MN
Stephen A. Sems, MD, Rochester, MN
Clay A. Spitler, MD, Madison, MS
John C. Weinlein, MD, Memphis, TN
Gillian Soles, MD, Pittsford, NY

Orthopaedic Trauma Research Consortium

To evaluate the factors associated with infection in open tibial shaft fractures requiring flap coverage with specific interest in the timing of definitive fixation with respect to coverage.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
4:30 PM  PAPER 425  
**Intramedullary Nails have Faster Union and Fewer Secondary Grafts/Reoperations than Plates with the Masquelet Technique**

_Benjamin D. Streufert, MD, Tampa, FL_

Michael P. Morwood, MD, Tampa, FL  
Amy A. Bauer, BS, Cocoa Beach, FL  
Catherine R. Olinger, MD, Memphis, TN  
Michael J. Beebe, BS, MD, Germantown, TN  
Frank A. Liporace, MD, Englewed Cifs, NJ  
Cory A. Collinge, MD, Nashville, TN  
Roy W. Sanders, MD, Tampa, FL  
Hassan R. Mir, MD, MBA, Tampa, FL

Patients with bone loss from lower extremity trauma treated with the Masquelet technique had faster union, fewer grafting procedures, and fewer reoperations with nail versus plate fixation.

4:36 PM  PAPER 426  
**Distraction Histio genesis of the Tibia: Indications and Outcomes of 197 Cases**

_Nikola Lekic, Miami, FL_

James J. Hutson, MD, Miami, FL

Distraction histio genesis is a reliable method for solving very complex problems such as fractures with segmental bone loss, congenital or acquired deformity, soft tissue defects, and vascular injury.

5:00 PM  PAPER 429  
**Effect of Postoperative Nonsteroidal Antiinflammatory Drugs (NSAIDs) on Nonunion Rates in Long Bone Fractures**

_William Tucker, MD, Kansas City, KS_

Mitchell C. Birt, MD, Kansas City, KS  
Archie A. Heddings, MD, Kansas City, KS  
Greg A. Horton, MD, Kansas City, KS

Database study showing NSAID use poses an increased risk for nonunion in operatively treated long bone fractures. Nonunions lead to significantly higher costs.

5:12 PM  PAPER 430  
**Hypoalbuminemia is an Independent Risk Factor for Mortality, Postoperative Complications, Readmission, and Reoperation in the Operative Lower Extremity Orthopaedic Trauma Patient**

_Jacob M. Wilson, MD, Atlanta, GA_

Matthew Lunati, MD, Atlanta, GA  
Christopher A. Staley, BA, Atlanta, GA  
Zachary Grabel, MD, Atlanta, GA  
Andrew M. Schwartz, MD, Atlanta, GA  
Mara L. Schenker, MD, Atlanta, GA

In a review of 5,673 patients having surgery for lower extremity fracture, malnutrition was associated with increased risk of complication, mortality, readmission, reoperation, and longer LOS.

5:18 PM  PAPER 431  
**Safety of Osseointegrated Implants for Transtibial Amputees: A Two-Center Prospective Proof-of-Concept Study**

_Robin Atallah, MD, Nijmegen, Netherlands_

William Y. Lu, PhD, Bella Vista, Australia  
Jiao Jiao Li, PhD, Sydney, Australia  
Jan Paul M. Frolke, MD, Nijmegen, Netherlands  
Munjed Al Muderis, FRACS, FRCS (Ortho), Bella Vista, Australia

This paper represents the first multicenter study assessing the safety, feasibility, and benefits of osseointegration in individuals with transtibial amputations.

5:24 PM  PAPER 432  
**Fracture Dislocation of the Knee: A Retrospective Review of 342 Patients**

_John R. Worley, MD, Columbia, MO_

Olubusola Brimmo, MD, Columbia, MO  
Clayton W. Nuelle, MD, San Antonio, TX  
James L. Cook, DVM, PhD, Columbia, MO  
James P. Stannard, MD, Columbia, MO

Fracture dislocations occurred in 29.5% of patients with knee dislocation. Fracture dislocations were less able to return to their previous level of activity, but returned to work at a similar rate.
Does Suprapatellar Tibial Nailing Reduce Long-Term Knee Pain?
Isaac Marckenley, Lauderdale Lakes, FL
Robert V. O'Toole, MD, Lutherville, MD
Ugo Udogwu, BA, New York, NY
Daniel Connelly, BS, Baltimore, MD
Mitchell Baker, BS, Baltimore, MD
Christopher T. LeBrun, MD, Ellicott City, MD
Theodore T. Manson, MD, Bel Air, MD
Mauri L. Zomar, CCRP, New Westminster, BC, Canada
Nathan N. O’Hara, Baltimore, MD
Gerard Slobogean, MD, MPH, Baltimore, MD
Shock Trauma Orthopaedics

To compare the magnitude of knee pain between the suprapatellar and infrapatellar approach for tibial nailing in patients who are more than one year post-injury.

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The Incidence of Knee Pain after Suprapatellar Intramedullary Nailing at Long-Term Follow Up
Terrence Daley-lindo, MD, Orlando, FL
Joshua A. Parry, MD, Denver, CO
Kenneth J. Koval, MD, Belle Isle, FL
Joshua Langford, MD, Orlando, FL
Slight knee pain and poor Tegner Lysholm Knee Scores were common five to 10 years after suprapatellar nailing of tibial shaft fractures.

Do PROMIS Outcome Scores Correlate between Elective and Non-Elective Orthopaedic Surgery?
Brett D Crist, MD, Columbia, MO
Troy Pashuck, MD, Columbia, MO
Baylee C. Sinclair, Columbia, MO
The level of function, pain, and disability associated with various orthopaedic operations is not completely reflected by the PROMIS outcome measures. This information can be used to educate patients.

Complications with Anticoagulation Therapy in Patients with Cervical Fractures
Conor Dunn, MD, MS, Cedar Grove, NJ
Jennifer Kurowicki, MD, Jersey City, NJ
Kimona Issa, MD, Little Falls, NJ
Michael Faloon, MD, Hoboken, NJ
Charles Long, MD, Paterson, NJ
Kumar G. Sinha, MD, Wayne, NJ
Aspirin and antiplatelet therapy within six months of cervical fracture had the lowest proportion of thromboembolic events in these patients.

Prognostic Utility of Magnetic Resonance Imaging in Predicting Neurological Outcomes in Acute Thoracolumbar Spine Injury
Rishi M. Kanna, MS, MBBS, Coimbatore, India
Ankith NV, MS, Coimbatore, India
Ajoy P. Shetty, Coimbatore, India
Shanmuganathan Rajasekaran, PhD, Coimbatore, India
The study identifies the role of MRI in predicting neurological outcomes in patients with spinal cord injury.

Deriving a Novel, Simple Algorithm for Indicating a CT Angiography of the Head and Neck for Patients with Cervical Spine Fractures: Preventing Undue Morbidity, Improving Care, and Reducing Costs
Mitchell Fourman, MD, Pittsburgh, PA
Nicholas Vaudreuil, MD, Pittsburgh, PA
Malcolm Dombrowski, MD, Pittsburgh, PA
Richard Wawrose, MD, Pittsburgh, PA
Louis Alarcon, MD, Pittsburgh, PA
Joon Y. Lee, MD, Pittsburgh, PA
William F. Donaldson, MD, Pittsburgh, PA
We have devised a simple, easy-to-calculate algorithm for predicting the need and utility of obtaining a computed tomography angiogram of the neck following a cervical spine fracture.

Long-Term Follow-Up Results in Patients with Thoracolumbar Unstable Burst Fracture Treated with Temporary Posterior Instrumentation without Fusion and Implant Removal Surgery
Sang-Bong Ko, MD, Daegu, Republic of Korea
Seungbum Chae, Daegu, Republic of Korea
Wonkee Choi, Daegu, Republic of Korea
Jun Young Kim, MD, Daegu, Republic of Korea
Temporary posterior instrumentation without fusion and implant removal surgery can be one of the alternative treatments useful for unstable thoracolumbar burst fracture, instead of the traditional posterior instrumentation and fusion.

Complications and Anticoagulation Therapy in Patients with Cervical Fractures
Conor Dunn, MD, MS, Cedar Grove, NJ
Jennifer Kurowicki, MD, Jersey City, NJ
Kimona Issa, MD, Little Falls, NJ
Michael Faloon, MD, Hoboken, NJ
Charles Long, MD, Paterson, NJ
Kumar G. Sinha, MD, Wayne, NJ
Aspirin and antiplatelet therapy within six months of cervical fracture had the lowest proportion of thromboembolic events in these patients.
4:36 PM  PAPER 441
Does Duration of Preoperative Radiculopathy Symptoms Impact Postoperative Outcomes and Reoperations After an Anterior Cervical Discectomy and Fusion?
Daniel Tarazona, Philadelphia, PA
Taolin Fang, MD, PhD, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Alan S. Hilibrand, MBA, MD, Philadelphia, PA
Christopher Kepler, MD, Philadelphia, PA
Jeffrey A. Rihn, MD, Media, PA
Mark F. Kurdi, MD, Bryn Mawr, PA
Kristen E. Radcliff, MD, Egg Harbor Township, NJ
Gregory D. Schroeder, MD, Philadelphia, PA

Delaying surgical intervention for cervical radiculopathy results in worse postoperative health-related quality of life outcomes following ACDF, but does not result in a higher rate of revision.

Discussion

4:48 PM  PAPER 442
Does Severity of Preoperative Myelopathy Symptoms Impact Health-Related Quality of Life in Cervical Spondylotic Myelopathy?
Daniel Tarazona, Philadelphia, PA
Emily Pflug, BS, Philadelphia, PA
Taolin Fang, MD, PhD, Philadelphia, PA
Alan S. Hilibrand, MBA, MD, Philadelphia, PA
Christopher Kepler, MD, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Gregory D. Schroeder, MD, Philadelphia, PA
Kristen E. Radcliff, MD, Egg Harbor Township, NJ

Early surgery for mild myelopathy should be strongly considered. Patients with mild myelopathy had similar improvements than moderate-severe group and maintained higher preoperative functional status.

Discussion

5:00 PM  PAPER 444
Ten-Year Longitudinal Follow Up MRI Study of Thoracic Intervertebral Discs in Asymptomatic Volunteers
Eijiro Okada, MD, PhD, Tokyo, Japan
Kenshi Daimon, MD, Tokyo, Japan
Hirokazu Fujiwara, MD, Tokyo, Japan
Yuji Nishiwaki, Tokyo, Japan
Kenya Nojiri, PhD, Isehara, Japan
Nobuyuki Fujita, Tokyo, Japan
Takashi Tsuji, MD, PhD, Tokyo, Japan
Kentaro Shimizu, Sano City, Japan
Hiroko Ishihama, Sano City, Japan
Masahiko Watanabe, MD, PhD, Kanagawa, Japan
Hiroyuki Katoh, MD, PhD, Kanagawa, Japan
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan
Kota Watanabe, MD, PhD, Tokyo, Japan
Keio Spine Research Group

The 10-years follow-up study was conducted to longitudinally evaluate intervertebral-disc degeneration in the thoracic spine. The progression of thoracic disc degeneration was observed in 63.1%.

Discussion

5:54 PM  PAPER 443
Effect of Local Retropharyngeal Steroids on Fusion Rate after Anterior Cervical Discectomy and Fusion
Sapan D. Gandhi, MD, Royal Oak, MI
Ryan Sauber, MD, Baden, PA
Kevin Weisz, BS, Canton, MI
Trevor Tooley, BS, Southfield, MI
Kevin C. Baker, PhD, Royal Oak, MI
Daniel K. Park, MD, Bloomfield Hills, MI

In a retrospective case control series, we found that patients who received retropharyngeal steroids prior to closure during ACDF had a lower rate of fusion than those who did not.

5:58 PM  PAPER 445
Epidemiology of Lumbar Spine Conditions in Professional Baseball Players
Melvin Makhni, MBA, MD, New York, NY
Frank Curriero, PhD, Baltimore, MD
Eric Leung, BA, New York, NY
Thomas E. Mroz, MD, Cleveland, OH
Christopher S. Ahmad, MD, New York, NY
Ronald A. Lehman, MD, New York, NY

Lumbar conditions of the disc and pars cause significant disability in a subset of MLB and MiLB players, with season-ending injuries occurring in 27.3% of cases.

5:58 PM  PAPER 446
Percutaneous Intradiscal Amniotic Suspension Allograft Partially Restores Disc Space in a Rabbit Model of Intervertebral Disc Degeneration
Tianyi D. Luo, MD, Winston-Salem, NC
Zachary Zabarsky, Winston-Salem, NC
Alexandro Marquez-Lara, MD, Winston-Salem, NC
Alexander Jinnah, MD, Winston-Salem, NC
Thomas L. Smith, PhD, Winston-Salem, NC
Zhongyu J. Li, MD, Winston-Salem, NC
Tadhg J. O’Gara, MD, Winston-Salem, NC

Using a rabbit model, we evaluated the amniotic suspension allograft to treat induced disc degeneration. Intradiscal treatment partially regained disc space integrity and improved disc morphology.
 Patients Presenting with a Lumbar Far-Lateral Herniated Nucleus Pulposus can Expect Similar Postoperative Outcomes to those Presenting with a Central or Paracentral Herniation

Bryce A. Basques, MD, Chicago, IL
Dennis P. McKinney, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Michael T. Nolte, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Jonathan S. Markowitz, BS, Teaneck, NJ
Victor Lei, BS, Chicago, IL
Edward J. Goldberg, MD, Chicago, IL
Howard S. An, MD, Chicago, IL

Although far lateral lumbar disc herniations present with worse preoperative outcome scores, they can expect similar symptom improvement to central or paracentral herniations following discectomy.

Discussion

Clinical Outcomes of Decompression Alone versus Decompression and Fusion for First Episode Recurrent Disc Herniation

Leah Y. Carreon, MD, Louisville, KY
Erica F. Bisson, MD, MPH, Salt Lake City, UT
Eric Potts, Indianapolis, IN
Morgan E. Brown, MS, Louisville, KY
Rebecca Ruegg Cowan, MA, Indianapolis, IN
Stacie Gren, BSN, RN, Indianapolis, IN
Steven D. Glassman, MD, Louisville, KY

For a first episode RDH, surgeons can expect similar outcomes whether patients are treated with decompression alone or decompression and fusion.

Degenerative Cervical Spondylolisthesis: Does Adjacent Level Surgical Stabilization Result in Progressive Listhesis?

Philip Louie, MD, Chicago, IL
Hollis Johanson, Glenview, IL
Jacob T. Emerson, BA, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Bryce A. Basques, MD, Chicago, IL
Michael T. Nolte, MD, Chicago, IL
Dino Samartzis, PhD, Pok-Fu Lam, Hong Kong
Howard S. An, MD, Chicago, IL

Patients did not experience degenerative cervical spondylolisthesis (DCS) progression nor required further intervention despite altered stress at the DCS level with adjacent surgical intervention.

Discussion

Orthopedic Shoulder Surgery in the Ambulatory Surgical Center: Safety and Outcomes

Charles D. Qin, MD, Chicago, IL
Daniel M. Curtis, MD, Chicago, IL
Bruce Reider, MD, Rosemont, IL
Lewis L. Shi, MD, Chicago, IL
Michael J. Lee, MD, Chicago, IL
Aravind Athiviraham, MD, FRCSC, Chicago, IL

Patient undergoing nonarthroplasty shoulder surgery with risk factors for unplanned admission (male, comorbidity burden, open surgery) may be more suitable for hospital-based outpatient department.

Length of Stay in Total Shoulder Arthroplasty: Does Day of Surgery Matter?

Christopher Bush, MD, Royal Oak, MI
Jeffrey D. Osborne, MD, Troy, MI
Denise Koueiter, Royal Oak, MI
J. M. Wiater, MD, Royal Oak, MI

Day of surgery was found to have a more significant impact on LOS in patients being discharged to an ECF versus home, with Friday surgery having a significantly longer LOS.
4:12 PM  PAPER 453  The Effect of an Orthopaedic Specialty Hospital on Operating Room Efficiency in Shoulder Arthroplasty  
**Eric M. Padegimas, MD, Philadelphia, PA**  
Benjamin Hendy, MD, Philadelphia, PA  
Wayne Chan, MD, PhD, Westborough, MA  
Cassandra Lawrence, MD, Philadelphia, PA  
Surenam Namdari, MD, MSc, Philadelphia, PA  
Mark D. Lazarus, MD, Philadelphia, PA  
Gerald R. Williams, MD, Philadelphia, PA  
Matthew L. Ramsey, MD, Philadelphia, PA  
John G. Horneff, MD, Philadelphia, PA  
For matched primary shoulder arthroplasty patients, OR efficiency at our OSH was superior to our TRC despite similar clinical variables.

Discussion

4:24 PM  PAPER 454  Opioid Consumption after Knee Arthroscopy  
**Anthony Porter, MD, San Diego, CA**  
Laura A. Alberton, MD, La Jolla, CA  
Jan Fronek, MD, La Jolla, CA  
Daniel T. Keefe, MD, La Jolla, CA  
Patients undergoing knee arthroscopy with and without ACL reconstruction consumed far less narcotics than were prescribed postoperatively, creating a surplus of unused opioids.

4:30 PM  PAPER 455  Eighty-Nine Percent of Opioids Prescribed for Outpatient Pediatric Surgery Go Unused  
**Selina Poon, MD, S Pasadena, CA**  
De-An Zhang, MD, Pasadena, CA  
Ronen Sever, MD, Sierra Madre, CA  
Cynthia Nguyen, MD, Pasadena, CA  
Robert H. Cho, MD, Los Angeles, CA  
This study reports that 89% of prescribed doses of opioids for postoperative pain went unused with our pediatric pain medication protocol.

4:36 PM  PAPER 456  The Association of Opioid Utilization and Patient Satisfaction Following Outpatient Orthopaedic Surgery: More is Not Better  
**Connor A. King, MD, Chicago, IL**  
David C. Landy, MD, Chicago, IL  
John Curran, Bloomington, IL  
Megan Conti Mica, MD, Chicago, IL  
Lower pain scores were associated with increasing patient satisfaction; however this was independent of postoperative opioid utilization.

Discussion

4:48 PM  PAPER 457  Narcotic Prescribing and Use Practices after Arthroscopic Meniscectomy  
**Steven Andelman, MD, New York, NY**  
Daniel Bu, BA, New York, NY  
Benedict U. Nwachukwu, MD, MBA, New York, NY  
Nicholas Debellis, MD, New York, NY  
Nebiyu Osman, BA, New York, NY  
Shawn G. Anthony, MD, MBA, New York, NY  
James N. Gladstone, MD, New York, NY  
Alexis C. Colvin, MD, New York, NY  
In this study, patients were prescribed 3x as many opioid narcotics for postoperative analgesia as required. Most patients can be given 15 opioid pills or less for adequate postoperative analgesia.

Discussion

4:54 PM  PAPER 458  Preoperative Patient Education Significantly Decreases Postoperative Narcotic Use after Arthroscopic Meniscectomy  
**Steven Andelman, MD, New York, NY**  
Nicholas Debellis, MD, New York, NY  
Daniel Bu, BA, New York, NY  
Nebiyu Osman, BA, New York, NY  
Benedict U. Nwachukwu, MD, MBA, New York, NY  
Shawn G. Anthony, MD, MBA, New York, NY  
James N. Gladstone, MD, New York, NY  
Alexis C. Colvin, MD, New York, NY  
Preoperative patient education regarding appropriate opioid usage and non-narcotic analgesic options decreases postoperative narcotic consumption by 420% after arthroscopic meniscectomy.

5:00 PM  PAPER 459  A Goal-Directed Quality Improvement Initiative to Reduce Opioid Prescriptions After Orthopaedic Procedures  
**Trevor Grace, MD, San Francisco, CA**  
Krishn Khanna, MD, San Francisco, CA  
Kevin J. Choo, MD, San Francisco, CA  
Erik N. Hansen, MD, San Francisco, CA  
In this analysis, we determine that an institutional quality improvement initiative was successful in reducing discharge opioid prescriptions after orthopaedic surgery, without increasing refill rates.

Discussion

5:12 PM  PAPER 460  Narcotic Prescribing Patterns Among Orthopaedic Surgeons in Upper Extremity Cases  
**Joseph Letzelter, MD, New York, NY**  
Joseph A. Bosco III, MD, New York, NY  
Lorraine Hutzler, BA, New York, NY  
Nader Paksima, DO, New York, NY  
Our study highlighted the wide variability in opioid prescriptions in patients undergoing upper extremity surgery, and the need to create a protocol, limiting the number of narcotic pills prescribed.
Patient Opioid Requirements are Often Far Less than their Discharge Prescription Following Orthopaedic Surgery: Results of a Prospective Multicenter Survey
Cody Wyles, MD, Rochester, MN
Mario Hevesi, MD, Zumbrota, MN
Cornelius Thiels, DO, Rochester, MN
Daniel S. Ubl, MPH, Rochester, MN
Halena Gazelka, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Tad M. Mabry, MD, Rochester, MN
Elizabeth Habermann, PhD, MPH, Rochester, MN

This prospective multicenter survey study precisely defines the quantity and length of time patients use opioids following seven common elective orthopaedic procedures.

Reduction of Opioid Over-Prescribing and Consumption after Hand and Upper Extremity Surgery through a Comprehensive Pain Plan
Marissa Jamieson, MD, Columbus, OH
Joshua Everhart, MD, Columbus, OH
James S. Lin, MD, Columbus, OH
Kanu S. Goyal, MD, Columbus, OH

With implementation of an opioid pill calculator and comprehensive pain plan at an outpatient hand surgery center, we significantly reduced the number of opioids prescribed, used, and wasted.

Prescribing and Consumption of Initial Opioid Prescription after Primary, Unilateral Total Knee Arthroplasty and Total Hip Arthroplasty in Opioid Naïve Patients
Karl C. Roberts, MD, Grand Rapids, MI
Angela Collins, MD, Linden, MI
Brian R. McCardel, MD, Lansing, MI
Kyle Schultz, DO, Grand Blanc, MI
Nathaniel Schaffer, MD, Ann Arbor, MI
Joseph S. Tramer, MD, Berkley, MI
Greg Carpenter, MD, Ann Arbor, MI
Kendall Dubois, MS, Ann Arbor, MI
Chad M. Brummett, MD, Ann Arbor, MI

Determining the discrepancy in prescribing and consumption of the initial opioid prescription after primary, unilateral total knee arthroplasty and total hip arthroplasty in opioid naïve patients.

The High Prevalence of Opioid and Benzodiazepine Prescriptions for Osteoarthritis
Vignesh K. Alamanda, MD, Charlotte, NC
Meghan Wally, MSPH, Charlotte, NC
Rachel Seymour, PhD, Charlotte, NC
Bryan D. Springer, MD, Charlotte, NC
Joseph R. Hsu, MD, Charlotte, NC

Opioids are still used as an active treatment for almost a third of osteoarthritis patients despite contrary evidence.

Can Surgeons Accurately Identify Patient Coping Style After Routine Clinical Consultation?
Marlis Sabo, MD, Calgary, AB, Canada
Mili Roy, MSc, Calgary, AB, Canada

Surgeons are not able to accurately identify those patients with high levels of pain catastrophizing during routine initial consultation.

The Effect of Vitamin C on Finger Stiffness After Fracture of the Distal Radius: A Double-Blind Placebo-Controlled Randomized Trial
Sezai Özkan, MD, Doetinchem, Netherlands
Teun Teunis, MD, Amsterdam, Netherlands
Neal C. Chen, MD, Boston, MA
David C. Ring, MD, Austin, TX

Vitamin C does not facilitate recovery from distal radius fracture; nurturing more adaptive coping strategies merits additional attention for facilitating recovery.

Which Radiographic Parameters for Reduction are Clinically Relevant Following Surgical Treatment of Distal Radius Fractures
Nicholas J. Dantzker, MD, Nashville, TN
William P. Abbiott, MD, Nashville, TN
Mihir Desai, MD, Nashville, TN

The traditional radiographic parameters used to assess reduction following surgical treatment of distal radius fractures are not equally predictive of patient-reported outcomes.
Wednesday Educational Programs

4:24 PM
PAPER 469
Costs Associated with 90-Day Episode of Care in Patients Undergoing Open Reduction Internal Fixation for Distal Radius Fractures

Azeem T. Malik, MBBS, Columbus, OH
Nikhil Jain, MBBS, MD, Columbus, OH
Kanu S. Goyal, MD, Columbus, OH
Hisham Awan, MD, Columbus, OH
Abhishek Julka, MD, Columbus, OH
Safdar N. Khan, MD, Columbus, OH

Facility-based charges were the major cost-driver of 90-day costs in patients undergoing ORIF for distal radius fractures with surgery in outpatient setting decreasing overall cost by nearly $5,000.

4:30 PM
PAPER 470
Distal Radius Volar Plate Design Predicts Volar Prominence to the Watershed Line in Clinical Practice: Comparison of Soong Grading of Two Common Low Profile Plates in 400 Patients

Minke Bergsma, MD, Amsterdam, Netherlands
Job N. Doornberg, MS, Amsterdam, Netherlands
Ruurd Jaarsma, FRACS, MD, Bedford Park, Australia
Bhavin Jadav, MBBS, MS, Oaklands Park, Australia

This retrospective cohort study shows that the use of the variable angle LCP plate results in more prominent volar positioning with respect to the watershed as compared to the DVR crosslock plate.

4:36 PM
PAPER 471
Liposomal Bupivacaine Does Not Provide Additional Postoperative Pain Control for Distal Radius Fracture Volar Plating Performed with a Supraclavicular Nerve Block

Yen H. Chen, MD, Bellerose, NY
Charles Ekstein, MD, Brooklyn, NY
Sohum Patwa, BA, Albertson, NY
Marlena McGill, BS, New Hyde Park, NY
Joanna S. Fishbein, MPH, Manhasset, NY
David V. Tuckman, MD, Manhasset, NY
Andrew S. Greenberg, MD, Great Neck, NY
Lewis B. Lane, MD, Great Neck, NY
Kate W. Nellans, MD, Port Washington, NY

Liposomal bupivacaine did not provide a measurable benefit in VAS pain or QuickDASH function scores in patients undergoing distal radius volar plating who also received a supraclavicular nerve block.

Discussion

5:54 PM
PAPER 473
Outcomes of Staged Treatment for Complex Distal Radius Fractures

Ashish Shah, MD, Birmingham, AL
Brooks Ficke, MD, Roswell, GA
Erin Ransom, MD, Birmingham, AL
Matthew Hess, BS, Birmingham, AL
Chason Farnell, BS, Birmingham, AL
Sameer Naranje, MS, MBBS, Birmingham, AL
Nileshkumar Chaudhari, MD, Birmingham, AL
Andrew Moon, BS, Shrewsbury, MA

Staged external fixation followed by ORIF results in reliable healing of complex fractures with a 96% union rate; however, this protocol is also associated with a high complication rate of 40%.

5:00 PM
PAPER 472
Corrective Osteotomy for Distal Radius Malunion: Complication Rates and Risk Factors

Kevin T. Rezzadeh, BA, New York, NY
Sara Glynn, CPA, New York, NY
Louis W. Catalano, MD, New York, NY
Steven Z. Glickel, MD, New York, NY
Jacques H. Hacquebord, New York, NY

In this study, we examine the complication rate for corrective surgery and attempt to identify associated risk factors.

Discussion

5:12 PM
PAPER 474
Volar Plating in Distal Radius Fractures: A Prospective Clinical Study on Efficacy of Dorsal Tangential Views to Avoid Screw Penetration

Minke Bergsma, MD, Amsterdam, Netherlands
Job N. Doornberg, MS, Amsterdam, Netherlands
Robin A. Duit, Nijmegen, Netherlands
Aimane Saarig, Amsterdam, Netherlands
David K. Worsley, FAORTHA, FRACS, Bedford Park, Australia
Ruurd Jaarsma, FRACS, MD, Bedford Park, Australia

The dorsal tangential view leads to change of screws in one-third of cases in order to avoid potential iatrogenic extensor tendon rupture after volar plating for distal radius fractures.

Discussion

5:18 PM
PAPER 475
Impact of Time to Fixation on Outcomes of Operative Treatment of Intraarticular Distal Radius Fractures

Andrew J. Grier, MD, Durham, NC
Tyler S. Pidgeon, MD, Providence, RI
Rita Baumgartner, MD, Durham, NC
Alexandra Paul, BS, Durham, NC
Marc J. Richard, MD, Durham, NC
David S. Ruch, MD, Durham, NC

Time to surgery did not significantly impact the incidence of postoperative complications, time to union, or composite range of motion at final follow up independent of AO fracture type.

Discussion

5:30 PM
PAPER 476
Volar Plating versus Nonsurgical Management for Distal Radius Fracture in Elderly Patients: A Systematic Review and Meta-Analysis

Nedal Alkhatib, Doha, Qatar
Abdullah S. Abdullah, MD, Doha, Qatar
Manaf H. Younis, MD, Doha, Qatar

Open reduction and volar plating for unstable distal radius fracture in elderly has better function and quality of life compared to nonsurgical management.
In evaluation of a large Medicare database, only a small percentage (1.0%) of elderly patients with a distal radius fracture initially treated nonoperatively require a subsequent wrist surgery.

Repairing the pronator quadratus offers minimal improvements in the clinical outcome.

Ulnar styloid fractures are a common concomitant injury occurring in nearly half of distal radius fractures, and over a half go onto nonunions. The presence, type, nor union effected patient outcomes.

Our study supports updating the AUC to include age and fracture displacement as essential components in deciding whether or not a selected treatment is a reasonable choice.

We investigated the efficacy of olaratumab combined with standard regimens using undifferentiated sarcoma patient-derived orthotopic xenografts and revealed novel promising strategies.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
4:24 PM  
PAPER 484  
**The Use of Custom Made Prostheses after Oncological Pelvis Resections: Remarks Deriving from our Experience**  
*Sheila Shytaj, Pisa, Italy*  
Fabio Cosseddu, MD, Pisa, Italy  
Matteo Ceccoli, MD, Pisa, Italy  
Federico Sacchetti, MD, Pisa, Italy  
Stefano Grossi, Pisa, Italy  
Lorenzo Andreani, MD, PhD, Marina Di Carrara, Italy  
Rodolfo Capanna, MD, Pisa, Italy  

A brief account of our current method in the approach of pelvic bone surgery, supported by the use of 3D techniques and custom made prosthesis.

4:30 PM  
PAPER 485  
**Analysis of Principles Inspiring Design of 3D Printed Prostheses in Two Referral Centers**  
*Pietro Ruggieri, MD, PhD, Padova, Italy*  
Andrea Angelini, MD, PhD, Padova, Italy  
Elisa Pala, MD, PhD, Padova, Italy  
Antonio Berizzi, MD, Padova, Italy  
Giulia Trovarelli, MD, Padova, Italy  
Daniel Kotrych, MD, PhD, Szczecin, Poland  

3D-printed prostheses are useful reconstructive options after tumor resection or failed prior implants at mid-term, with good functional and oncologic outcomes. Complication rate is still high.

4:36 PM  
PAPER 486  
**The Application of 3D Printing Technology in the Pelvic Bone Tumor Surgery**  
*Jong Woong Park, Goyang*  
Hyun-Guy Kang, MD, Gyeonggi, Republic of Korea  
June Hyuk Kim, MD, Goyang, Republic of Korea  
Han-Soo Kim, MD, PhD, Seoul, Republic of Korea  

Surgical results using 3D printed surgical guides and implants were acceptable in short-term follow up.

4:48 PM  
PAPER 487  
**Surgical Treatment of Bone and Soft Tissue Sarcomas: Unplanned Readmissions and Risk Factors**  
*Karina W. Lo, BS, Boston, MA*  
Gabriel Makar, Rutherford, NJ  
John Gaughan, PhD, Philadelphia, PA  
Tae W. Kim, MD, Camden, NJ  

Readmission rates in patients with bone or soft tissue sarcoma are double that of arthroplasty patients; 30- and 90-days readmission risk factors are surgical complication and depression respectively.

4:54 PM  
PAPER 488  
**The Clinical Significance of 18F-fluorodeoxyglucose Positron Emission Tomography/Computed Tomography for Pulmonary Nodules in Patients with Soft Tissue Sarcoma**  
*Tomohito Hagi, Tsu, Japan*  
Tomoki Nakamura, MD, PhD, Tsu City, Japan  
Kunihiro Asanuma, MD, PhD, Tsu, Japan  
Akihiro Sudo, MD, Tsu City, Japan  

We determined the accuracy of FDG-PET/CT for pulmonary metastasis in patients with STS. In conclusion, FDG-PET/CT may be limited in making a differential diagnosis between metastatic and benign nodules.

5:00 PM  
PAPER 489  
**Sarcopenia is Associated with Increased Mortality and Complications Following Limb-Sparing Reconstruction for Sarcoma of the Extremities**  
*Nathan Hendrickson, MD, Iowa City, IA*  
Zachary Mayo, BS, Iowa City, IA  
Alan Shamrock, BS, Coralville, IA  
Natalie A. Glass, PhD, Iowa City, IA  
Peter Nau, FACS, MD, Iowa City, IA  
Benjamin J. Miller, MD, Iowa City, IA  

Sarcopenia predicts increased mortality and complications in sarcoma patients, independent of tumor stage or grade.

4:40 PM  
PAPER 490  
**Comparison of Reconstruction versus No Reconstruction Following Acetabular Resection for Pelvic Chondrosarcoma**  
*Matthew T. Houdek, MD, Rochester, MN*  
Brent Witten, MD, Rochester, MN  
Joshua Johnson, MD, Rochester, MN  
Anthony M. Griffin, MSc, Toronto, ON, Canada  
Franklin H. Sim, MD, Rochester, MN  
Jay Wunder, MD, Toronto, ON, Canada  
Peter S. Rose, MD, Rochester, MN  
Peter Ferguson, MD, Toronto, ON, Canada  
David G. Lewallen, MD, Rochester, MN  

For certain patients, acetabular reconstruction may provide some benefit; however there was no difference in functional outcome comparing reconstruction to no reconstruction.

5:12 PM  
PAPER 491  
**Inferior Vena Cava Filter Placement in 286 Patients with Malignant Disease: Benefits Continue to Outweigh Risks**  
*Valdis Lelkes, MD, Newark, NJ*  
Joseph A. Ippolito, MD, West Orange, NJ  
Ayodeji Folarin, BA, Williamstown, NJ  
Kathleen S. Beebe, MD, Montclair, NJ  
Francis R. Patterson, MD, Newark, NJ  
Joseph Benevenia, MD, Newark, NJ  

IVC filter placement was consistent with a 99.3% prevention rate of PE and a 1.1% filter-related complication rate. No patient in this series suffered an acute, fatal PE.
Are Rural Osteosarcoma Patients at Risk for Worse Outcomes?
Ryan Wendt, BS, Iowa City, IA
Yubo Gao, PhD, Iowa City, IA
Benjamin J. Miller, MD, Iowa City, IA
Distance/time to the nearest comprehensive center showed minimal effect on tumor size or metastasis at presentation, but residing in a rural county was associated with a greater risk of mortality.

Discussion

The Creation of a Novel Synthetic Periosteum Using 3D Bioprinting on a Biologic Matrix
Daniel Kiridly, MD, Nesconset, NY
Brandon Alba, BA, Brooklyn, NY
Pooja Swami, Manhasset, NY
Howard J. Goodman, MD, Englewood, NJ
Daniel A. Grande, PhD, Manhasset, NY
In this study we synthesized and studied a novel synthetic periosteum using 3D bioprinting of periosteal-derived cells in a precise lattice pattern on a collagen scaffold.

Does the Residual Epiphysis Grow after Epiphyseal-Preservation Surgery for Childhood Osteosarcoma around the Knee Joint?
Akihiko Takeuchi, MD, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Hidenori Matsubara, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kentaro Igarashi, MD, PhD, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hirota Yonezawa, MD, Kanazawa, Japan
Yoshihiro Araki, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Department of Orthopaedic Surgery, Graduate School of Medical Science, Kanazawa University
Epiphysis transverse growth was not diminished, and there was absence of epiphyseal collapse even after epiphyseal-preservation surgery in this small series of childhood osteosarcoma around the knee.

Outcomes of Expandable Prostheses for Primary Bone Malignancies in Skeletally Immature Patients: A Meta-Analysis
Daniel A. Portney, BS, Chicago, IL
Andrew S. Bi, BS, Chicago, IL
Robert A. Christian, MD, Chicago, IL
Terrance D. Peabody, MD, Chicago, IL
A pooled data summary to better understand outcomes and guide management decisions of expandable prostheses for skeletally immature patients with primary bone malignancies.

Discussion
THURSDAY EDUCATIONAL PROGRAMS

FLASH FIVE®

8:00 AM - 9:00 AM
Room 3401

FF2 Flash Five®: What’s Coming Down the Pike?
Moderator: Claudette M. Lajam, MD, New York, NY
Susan Bukata, MD, Los Angeles, CA
Henry D. Clarke, MD, Phoenix, AZ
Michael E. Darowish, MD, Hershey, PA
John R. Dimar II, MD, Louisville, KY
Thomas G. Harris, MD, Altadena, CA
Themistocles S. Protopsaltis, MD, New York, NY
Scott A. Rodeo, MD, New York, NY
Robert R. Slater, MD, Folsom, CA
Scott M. Sorenson, MD, Plano, TX
Robert Z. Tashjian, MD, Salt Lake City, UT
Heather A. Vallier, MD, Cleveland, OH

Experience a burst of knowledge given in five minutes on topics benefiting orthopaedists. Fast and focused... each expert takes on a hot topic and drills down to the most critical points and takeaways.

SPEED MENTORING FOR RESIDENTS

8:00 AM - 9:30 AM
Room 3301

Speed Mentoring Program for Residents
Moderator: Lisa K. Cannada, MD, Jacksonville, FL

Learn how to navigate the transition from residency to practicing physician from the pro’s. This session will focus on guidance of the practical and the intangibles you need to start your next phase of your career in a successful manner. CME credit is not available for this session.

I. Work-Life Balance Panel Discussion
Lisa K. Cannada, MD, Jacksonville, FL
Sheila A. Conway, MD, Miami, FL
Harpal S. Khanuja, MD, Cockeysville, MD
Wuddhav N. Sankar, MD, Wynnewood, PA
Andrew H. Schmidt, MD, Minneapolis, MN
Jeffrey M. Smith, MD, San Diego, CA

After panel discussion, Residents will rotate to various tables of their choice with the following faculty and topics:

II. How Fellowship is Different from Residency
John D. Adams, MD, Greenville, SC
Julie Y. Bishop, MD, Columbus, OH

III. Being an Effective Captain of the Ship (In and Out of the OR)
Joshua J. Jacobs, MD, Chicago, IL
James R. Ficke, MD, Baltimore, MD

IV. Getting Help: Developing Your Mentors and Networking
Kevin P. Black, MD, Hershey, PA
Samir Mehta, MD, Philadelphia, PA

V. Good to Great Residents/Fellows/Colleagues: The Intangibles
William N. Levine, MD, New York, NY
Gerald R. Williams Jr, MD, Philadelphia, PA

VI. A Day in the Life of an Orthopaedic Surgeon
Caroline Hettrich, MD, MPH, Lexington, KY
Wuddhav N. Sankar, MD, Wynnewood, PA

VII. A Day in the Life of a Private Practice Physician
Daniel K. Guy, MD, Lagrange, GA
Craig R. Mahoney, MD, West Des Moines, IA

VIII. A Day in the Life of an Alternative Hospital Employment
Emily S. Benson, MD, Ojai, CA
Jeffrey McLaughlin, MD, Oshkosh, WI

IX. Top 10 Things You Can’t Start Your Job Without
Antonia F. Chen, MD, MBA, Newton, MA
Christopher D. Harner, MD, Houston, TX

X. The View from the Other Side of the Desk (Remember When Interviewing)
Harpal S. Khanuja, MD, Cockeysville, MD
Douglas W. Lundy, MD, MBA, Atlanta, GA

XI. Time Management: Don’t Let Time Run Away
Robert H. Brophy, MD, Chesterfield, MO
Julie B. Samora, MD, Upper Arlington, OH

XII. Things You Never Thought of that Make a Difference
Kevin D. Plancher, MD, MPH, New York, NY
Theodore W. Parsons III, MD, FACS, Detroit, MI

XIII. If I Could Turn Back Time: What I Would Do Differently
Frank A. Liporace, MD, Englewood Cliffs, NJ
Afshin Razi, MD, Great Neck, NY

XIV. Your First 3 Months Defines Your Future (Tips for Success)
Jonathan G. Schoenecker, MD, Nashville, TN
Judith Siegel, MD, Worscester, MA

XV. Financial Management in Your Personal Life
Jacob M. Buchowski, MD, MS, Saint Louis, MO
Julie A. Switzer, MD, Worscester, MA

XVI. Mirror, Mirror What Do You See? (Am I the Orthopaedic Surgeon I Want Others to See?)
L. Scott Levin, MD, FACS, Philadelphia, PA
Miho J. Tanaka, MD, Baltimore, MD

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Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
THURSDAY EDUCATIONAL PROGRAMS

SYMPOSIUM

8:00 AM - 10:00 AM
Room 2102

K Technology Applications for Arthroplasty: Moving the Field Forward?
Moderator: Richard Iorio, MD, Boston, MA

Arthroplasty procedures are some of today's most successful interventions. Technology innovations may allow further improvements in an already highly successful field. But at what cost?

I. Intraoperative Digital Radiography Assisted Component Positioning
   Robert L. Barrack, MD, St. Louis, MO

II. Patient Specific Instrumentation and Custom Implants for TKA
   Wolfgang Fitz, MD, Boston, MA

III. Options for Robotic Assisted UKA
    Jess H. Lonner, MD, Bryn Mawr, PA

IV. Single Use Alignment Technology for Arthroplasty
    David J. Mayman, MD, New York, NY

V. Digital Sensor Assisted Arthroplasty for Balancing and Implant Position
    Patrick A. Meere, MD, New York, NY

VI. Options for Robotic Assisted TKA
    Michael A. Mont, MD, New York, NY

VII. Options for Robotic Assisted THA
    Bernard N. Stulberg, MD, Solon, OH

INSTRUCTIONAL COURSE LECTURES

8:00 AM - 10:00 AM

301 Let's Do an Efficient Direct Anterior Hip Replacement (Without a Special Table)
   Moderator: Kristoff Corten, MD, PhD, Genk, Belgium
   Ronald Driesen, MD, Genk, Belgium
   Hans-Erik Henkus, MD, The Hague, Netherlands
   Christophe Olyslaegers, MD, Hove, Belgium
   This is a video-based course focusing on local anatomy related to the direct anterior approach as well as surgical techniques for primary and revision total hip arthroplasty using a direct anterior approach without a special table. Tips for novices on how to shorten the learning curve are provided.

302 Minimizing Opioids in Total Joint Arthroplasty
   Moderator: Mark W. Pagnano, MD, Rochester, MN
   Matthew P. Abdel, MD, Rochester, MN
   David F. Dalury, MD, Baltimore, MD
   Craig J. Della Valle, MD, Chicago, IL
   This ICL will provide the latest information on mitigating perioperative pain, and thus narcotic usage when treating patients undergoing lower extremity arthroplasties.

303 Infection in Arthroplasty: The Basic Science of Bacterial Biofilms in its Pathogenesis, Diagnosis, Treatment, and Prevention
   Moderator: Fares S. Haddad, FRCS, London, United Kingdom
   William V. Arnold, MD, Meadowbrook, PA
   Thorsten M. Seyler, MD, PhD, Durham, NC
   Paul Stoodley, PhD, Columbus, OH
   Course faculty discuss the surest state of affairs with regard to orthopaedic infections and the challenge that biofilm formation presents to the orthopaedic community.

304 Percutaneous Techniques in Foot Surgery
   Moderator: Alastair S. E. Younger, MD, Vancouver, BC, Canada
   Jorge I. Acevedo, MD, Jacksonville, FL
   David J. Redfern, FRCS, London, United Kingdom
   Percutaneous foot surgery allows the achievement of surgical goals without the risks of open incisions. Experts demonstrate how to achieve the procedural goals.

305 Antibiotic Stewardship in Orthopaedic Surgery: Principles and Practice
   Moderator: Brett R. Levine, MD, Chicago, IL
   Matthew P. Abdel, MD, Rochester, MN
   Peter N. Chalmers, MD, Salt Lake City, UT
   Hassan R. Mir, MD, MBA, Tampa, FL
   John Segreti, Chicago, IL
   The emergence of resistance, geographical diversity of infecting pathogens, and changing patient population requires customization of our prophylactic regimen to reduce infectious complications. A multidisciplinary approach to an antimicrobial stewardship program leads to improved patient outcomes and cost-effective medical care.

306 Tips and Tricks in the Management of Distal Radius Fractures
   Moderator: Sanjeev Kakar, MD, Rochester, MN
   Julie E. Adams, MD, Rochester, MN
   Jorge L. Orbay, MD, Miami, FL
   Paul Tornetta, III, MD, Boston, MA
   The goal of this ICL is to provide an overview in the management of comminuted intra-articular distal radius fractures with technical tips and tricks.

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
This course reviews the most common bone and soft tissue tumors that present to the general orthopaedic surgeon or nontumor orthopaedic subspecialist. Both adult and pediatric clinical scenarios are covered. Presenters outline a strategy for working up and triaging suspicious lesions including when to refer to a musculoskeletal oncologist and also review the management of the asymptomatic incidentally discovered tumor in relation to the underlying relevant conditions. Common avoidable pitfalls and management errors are reviewed with a strong emphasis on case examples.

Management of Early Onset Scoliosis – From Mehta Casts to Magnetically Expandable Rods: State of the Art in 2019

Moderator: John T. Smith, MD, Salt Lake City, UT
Graham Fedorak, MD, Salt Lake City, UT
Sumeet Garg, MD, Aurora, CO
John A. Heflin, MD, Salt Lake City, UT

Management of early-onset scoliosis including evaluation of the new patient, Mehta cast treatment, and the decision making process and technical details of growth friendly surgery.

Physician Assistant Utilization within Your Practice

Moderator: Aaron J. Hewitt, PA-C, Naples, FL
Tricia Marriott, PA-C Waterbury, CT
Robert Raspa, PA-C, Rock Hill, SC
Leo R. Spector, MD, Charlotte, NC

Understand the range of strategies for usage of Physician Assistants within the orthopaedic practice setting. We will be focusing on reimbursement, utilization, and productivity.

Clavicle Trauma: From Midshaft Fractures in Contact Athletes to Distal Clavicle Fractures and Acromioclavicular Joint Injuries

Moderator: Michael D. McKee, MD, FRCS, Phoenix, AZ
Seth C. Gamradt, MD, Los Angeles, CA
Matthew J. Matava, MD, Chesterfield, MO
Jonas R. Rudzki, MD, Bethesda, MD

This course is a comprehensive review of clavicle trauma from mid-shaft fractures in contact athletes and the general population to distal clavicle fractures and acromioclavicular joint dislocations.

Comprehensive Management of Spinal Infections

Moderator: Christopher G. Furey, MD, Cleveland, OH
Zachary L. Gordon, MD, Cleveland, OH
Timothy A. Moore, MD, Shaker Heights, OH
Joseph D. Smucker, MD, Carmel, IN

A comprehensive review of the principles for the evaluation and management of spondylodiscitis, spinal epidural abscess, and post-operative infections of the spine.

Dilemmas for the Team Physician: Return-to-Play and the Management of In-Season Injuries

Moderator: Ashesh Bedi, MD, Ann Arbor, MI
Jonathan D. Packer, MD, Baltimore, MD
Scott A. Rodeo, MD, New York, NY
Marc R. Safran, MD, Redwood City, CA

In this course, experienced Team Physicians will discuss the in-season management of common injuries and the safe return-to-play. The role of orthobiologics will be discussed.

Proper Usage and Understanding of Antibiotics in the Treatment of Musculoskeletal Infections

Moderator: David W. Lowenberg, MD, Redwood City, CA
Douglas R. Osmon, MD, Rochester, MN
Javad Parvizi, MD, FRCS, Philadelphia, PA

Knowledge of how microbes gain a foothold and then evade common modes of treatment in the host are covered. The proper usage of antibiotics as well as their role and limitations in treatment of these infections are defined, including implant-related factors in infection.

Complex Shoulder Arthroplasty: Case Discussions and Management

Moderator: Thomas (Quin) W. Throckmorton, MD, Germantown, TN
April D. Armstrong, MD, Hershey, PA
Theodore A. Blaine, MD, Farmington, CT
Edward V. Craig, MD, Minneapolis, MN
Evan L. Flatow, MD, New York, NY
Mark Franklin, MD, Temple Terrace, FL
Leesa M. Galatz, MD, New York, NY
Matthew L. Ramsey, MD, Philadelphia, PA
Eric T. Ricchetti, MD, Cleveland, OH
John W. Sperling, MD, MBA, Rochester, MN
Thomas W. Wright, MD, Gainesville, FL

This course helps you understand and apply strategies for managing glenoid and humeral bone deficiency in shoulder arthroplasty, options and techniques available to treat infected shoulder arthroplasty, and causes for instability after shoulder arthroplasty. Learn to treat them according to each etiology.
THURSDAY EDUCATIONAL PROGRAMS

8:00 AM

**Sports Medicine V (496-510): Elbow/Foot and Ankle**

Moderator: Mark D. Miller, MD, Charlottesville, VA

Brian D. Busconi, MD, Worcester, MA
Charles A. Bush-Joseph, MD, Chicago, IL

Robert G. Marx, MD, New York, NY
Eric C. McCarty, MD, Boulder, CO
Claude T. Moorman, MD, Charlotte, NC

Dominant elbow MRI abnormalities commonly progress in Little League baseball players, particularly those playing pitcher or catcher and year-round players.

8:06 AM

**Little League Baseball Pitch Counts Vastly Underestimate Throws throughout a Season**

Elizabeth P Wahl, MD, Durham, NC

Tyler S. Pidgeon, MD, Providence, RI
Marc J. Richard, MD, Durham, NC

Little League Baseball players are throwing significantly more throws and more high-effort throws than what is recorded by the official guidelines, putting their elbows at risk of injury.

8:12 AM

**Sufficient Duration of Off-Season Decreases the Elbow Disorders in Elementary School Baseball Player**

Kenichi Otoshi, MD, PhD, Fukushima, Japan

An off-season of sufficient length (over 4 weeks each season) has a significant effect for preventing elbow disorders in elementary school-aged baseball players.

8:24 AM

**A Prospective Evaluation of Early Postoperative Complications after Distal Biceps Tendon Repairs**

Jonas L. Matzon, MD, Philadelphia, PA

Jack Graham, BS, Philadelphia, PA

Sreeram Penna, MBBS, MRCS, Byn Mawr, PA

Michael G. Cicotti, MD, Philadelphia, PA

Joseph A. Abboud, MD, Philadelphia, PA

Pedro K. Beredjiklian, MD, Philadelphia, PA

The complication rate after DBTR appears to be higher than the retrospective literature suggests. The rate of major complications appears to be similar between one-incision and two-incision repairs.

8:30 AM

**The Ulnar Collateral Ligament Responds to Stress in Professional Pitchers**

Peter N. Chalmers, MD, Salt Lake City, UT

Joy English, MD, Salt Lake City, UT

Steve H. Yoon, MD, Los Angeles, CA

Brian M. Schulz, MD, Newport Beach, CA

This ultrasonographic study demonstrates that the ulnar collateral ligament thickens and becomes more lax with higher pitch velocity and more years of pitching.

8:36 AM

**Interobserver and Intraobserver Reliability of a Magnetic Resonance Imaging Based Classification System for Injuries to the Ulnar Collateral Ligament**

Prem Ramkumar, MD, MBA, Cleveland Heights, OH

Salvatore J. Frangiamore, MD, MS, Wadsworth, OH

Sergio M. Navarro, Houston, TX

Scott G. Kaar, MD, St. Louis, MO

We outline a six-stage MRI-based classification utilizing grade and location of the injury that was found to have substantial to near perfect agreement between and within fellowship-trained observers.

8:48 AM

**Pitching Performance after Ulnar Collateral Ligament Reconstruction at a Single Institution in Major League Baseball Pitchers**

Nathan E. Marshall, MD, Los Angeles, CA

Robert A. Keller, MD, Los Angeles, CA

Orr Limpisvasti, MD, Los Angeles, CA

Neal S. ElAttrache, MD, Los Angeles, CA

Return to play is quite high at the MLB level after UCL reconstruction; pitching performance, including fastball velocity, initially decreases the first year then returns to previous levels.

Thursday

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8:54 AM  PAPER 503  
Trends in Pitching Performance in Major League Baseball Pitchers During the Season of Ulnar Collateral Ligament Reconstruction Surgery  
John R. Worley, MD, Columbia, MO  
Lasun O. Oladeji, MD, MS, Columbia, MO  
Seth Sherman, MD, Columbia, MO  
Aaron Gray, MD, Columbia, MO  

Data suggests pitching performance is poorer close to the time of the pitcher’s last appearance in pitchers undergoing UCL reconstruction.

9:00 AM  PAPER 504  
Major League Baseball Pitching Performance after Tommy John Surgery and the Effect of Tear Characteristics, Technique, and Graft Type  
Nathan E. Marshall, MD, Los Angeles, CA  
Robert A. Keller, MD, Los Angeles, CA  
Orr Limpisvasti, MD, Los Angeles, CA  
Brian M. Schulz, MD, Newport Beach, CA  
Neal S. ElAttrache, MD, Los Angeles, CA  

Ulnar collateral ligament tear characteristics have an effect on MLB pitching performance prior to injury and after reconstruction with technique and graft type showing less changes in performance.

9:12 AM  PAPER 505  
Does Perceived Effort Match Actual Measured Effort During Baseball Long Toss Programs?  
Heath Melugin, MD, Rochester, MN  
Dirk Larson, Rochester, MN  
Glenn S. Fleisig, PhD, Birmingham, AL  
Stan Conte, ATC, DPT, San Carlos, CA  
Stephen Fealy, MD, New York, NY  
Joshua S. Dines, MD, New York, NY  
John D’Angelo, BA, New York, NY  
Christopher L. Camp, MD, Rochester, MN  

Does perceived effort match actual measured effort during baseball long toss programs?

9:18 AM  PAPER 506  
Variability in Baseball Throwing Metrics During a Structured Long-Toss Program: Does One Size Fit All?  
Nels D. Leafblad, MD, Rochester, MN  
Dirk Larson, Rochester, MN  
Glenn S. Fleisig, PhD, Birmingham, AL  
Stan Conte, ATC, DPT, San Carlos, CA  
Stephen Fealy, MD, New York, NY  
Joshua S. Dines, MD, New York, NY  
John D’Angelo, BA, New York, NY  
Christopher L. Camp, MD, Rochester, MN  

Variability in baseball throwing metrics during a structured long-toss program: does one size fit all or should programs be individualized?

9:24 AM  PAPER 507  
Mid-Term Outcomes of Bone Marrow Stimulation for Primary Osteochondral Lesions of the Talus: A Systematic Review  
James P. Toale, Killiney, Ireland  
Yoshiharu Shimozono, MD, New York, NY  
Eoghan Hurley, MBCHB, Dublin, Ireland  
Jari Dahmen, Amsterdam, Netherlands  
Gino Kerkhoffs, Amsterdam, Netherlands  
John G. Kennedy, MD, New York, NY  

This systematic review found good clinical outcomes following BMS for primary OLT in the mid-term follow up.

9:36 AM  PAPER 508  
Return to Play Following Fasciotomy Chronic Exertional Compartment Syndrome: A Systematic Review  
Utkarsh Anil, BA, New York, NY  
Eoghan Hurley, MBCHB, Dublin, Ireland  
Anuj Bapodra, Newburgh, NY  
Eric J. Strauss, MD, Scarsdale, NY  

Return to sports and service after open fasciotomy for CECS is high but a smaller portion of patients return to same level of play and full active duty.

9:42 AM  PAPER 509  
Clinical Results of Extracorporeal Shock Wave Therapy for Chronic Achilles Tendinopathy in Runners  
Nobuhiko Sumiyoshi, Funabashi, Japan  
Kenji Takahashi, MD, Funabashi, Japan  
Akihiro Tsuchiya, MD, Funabashi, Japan  

Twenty-one high-level runners with chronic Achilles tendinopathy were treated with extracorporeal shock wave therapy. Nineteen runners successfully returned to competition at 3.7 months. Swelling of AT improved significantly in MRI.

9:48 AM  PAPER 510  
Epidemiology and Video Analysis of Achilles Tendon Rupture in the National Basketball Association 1969-2018  
Nicholas J. Lemme, MD, Providence, RI  
Justin E. Kleiner, BS, Providence, RI  
Neill Y. Li, MD, Providence, RI  
Sydney Tan, BA, Providence, RI  
Jaewon Yang, BA, Providence, RI  
Brett D. Owens, MD, East Providence, RI  

**Thursday Educational Programs**

**Paper Presentations 511-525**

**8:00 AM - 10:00 AM**

**Palazzo Ballroom L**

**Adult Reconstruction Hip IV (511-525): Labral tear**

*Moderators: Alexander C. Gordon, MD, Prospect Heights, IL and Mark W. Zawadsky, MD, Washington, DC*

**8:00 AM**

**Psychiatric Disorders and Osteoarthritis Independently Predict Failure of Hip Arthroscopy**

*Robert W. Westermann, MD, Iowa City, IA*

*Christopher West, MD, North Liberty, IA*

*Nicholas Bedard, MD, Iowa City, IA*

*Kyle Duchman, MD, Iowa City, IA*

*Thomas S. Lynch, MD, New York, NY*

*Marilyn C. Willey, MD, Iowa City, IA*

The failure of arthroscopic hip procedures (18%) is greater than previously reported; patients with OA, anxiety, and depression may be at increased risk for failure.

**8:06 AM**

**Mood Disorders Common and are Associated with Increased Preoperative Healthcare Costs for Patients Undergoing Hip Arthroscopy**

*Stephen T. Duncan, MD, Lexington, KY*

*Kate Jochimsen, ATC, MS, Lexington, KY*

*Caitlin W. Colley, ATC, PhD, Lexington, KY*

*Katherine Thompson, PhD, Lexington, KY*

*Cale Jacobs, PhD, Lexington, KY*

The 40% prevalence of mood disorders in the hip arthroscopy patient population is double that of previous OA and chronic pain reports, and healthcare costs in the year prior to surgery were also nearly double.

**8:12 AM**

**Natural History of the Dysplastic Hip Following Periacetabular Osteotomy**

*Cody Wyles, MD, Rochester, MN*

*Juan S. Vargas-Hernandez, MD, Rochester, MN*

*Mark J. Heidenreich, MD, Rochester, MN*

*Kristin Mara, MS, Rochester, MN*

*Christopher L. Peters, MD, Salt Lake City, UT*

*John C. Clohisy, MD, St. Louis, MO*

*Robert T. Trousdale, MD, Rochester, MN*

*Rafael J. Sierra, MD, Rochester, MN*

This study defines the precise radiographic natural history of the dysplastic hip following periacetabular osteotomy based upon the initial degree of osteoarthritis.

**8:24 AM**

**Is the Pelvic Tilt In Acetabular Retroversion Different to Asymptomatic Hips and Does it Change Following Anteverting Periacetabular Osteotomy?**

*George A. Grammatopoulos, MRCS, Ottawa, ON, Canada*

*Saif Salih, BA, FRCS (Ortho), Sheffield, United Kingdom*

*Paul E. Beaule, FRCS (Ortho), MD, Ottawa, ON, Canada*

*Johan Witt, MD, London, United Kingdom*

The pelvic tilt in retroversion cases is similar to that of asymptomatic volunteers and it does not change following PAO.

**8:30 AM**

**Mild or Borderline Hip Dysplasia: Are We Characterizing Hips with Lateral Center-Edge Angle between 18° and 25° Appropriately?**

*Michael McClincy, MD, Boston, MA*

*James Wylie, MD, Jamaica Plain, MA*

*Young Jo Kim, MD, PhD, Boston, MA*

*Michael B. Millis, MD, Boston, MA*

*Eduardo N. Novais, MD, Boston, MA*

A comprehensive evaluation of radiographic parameters in hips with LCEA 18-25° identifies sex-specific trends in hip morphology and shows a large proportion of dysplastic features among these hips.

**8:36 AM**

**PROMIS versus Legacy Patient Reported Outcomes in Patients Undergoing Surgical Treatment for Developmental Dysplasia of the Hip**

*Deborah Li, BA, Miami, FL*

*John C. Clohisy, MD, St. Louis, MO*

*Wahid Abu-Amer, MD, St. Louis, MO*

*Elizabeth L. Yanik, MSc, PhD, St. Louis, MO*

*Jeffrey J. Nepple, MD, St. Louis, MO*

*Cecilia Pascual-Garrido, MD, St. Louis, MO*

PROMIS pain and physical function domains are appropriate for studying and monitoring the clinical impact of PAO surgery for symptomatic acetabular dysplasia.
8:48 AM

PAPER 517

THURSDAY EDUCATIONAL PROGRAMS

Hip Arthroscopy compared with Physiotherapy and Activity Modification for the Treatment of Symptomatic Femoroacetabular Impingement: A Multi-Center Randomized Controlled Trial

Antony Palmer, MA, BMBCCh, Oxford, United Kingdom
Scott J. Fernquest, BA, MBBS, Oxford, United Kingdom
Vandana Ayyar Gupta, PhD, Oxford, United Kingdom
Ines Rombach, MSc, Oxford, United Kingdom
Susan Dutton, MSc, Oxford, United Kingdom
John A. Broomfield, Oxford, United Kingdom
Claudio Pereira, MSc, Oxford, United Kingdom
Ramy Mansour, MD, Oxford, United Kingdom
Simon J. Wood, MSc, PT, Oxford, United Kingdom
Alice C. Harin, Oxford, United Kingdom
Cushla Cooper, RN, Oxford, United Kingdom
Mo Gimpel, Southampton, United Kingdom
V Khanduja, MBBS, MSc, Herts, United Kingdom
Tom Pollard, MD, Reading, United Kingdom
Andrew W. McCaskie, MD, Cambridge, United Kingdom
Karen Barker, Oxford, United Kingdom
Antonia J. Andrade, MBBS, MSc, Crowthorne, United Kingdom
Andrew J. Carr, FRCS, Oxford, United Kingdom
David J. Beard, MA, MSc, Oxford, United Kingdom
Sion Glyn-Jones, MA MBBS, Oxford, United Kingdom

FAIT Investigators

Multicenter randomized controlled trial of 222 patients with symptomatic femoroacetabular impingement that demonstrates superior outcomes after hip arthroscopy compared with nonoperative intervention.

8:54 AM

PAPER 518

Prior Femoroacetabular Osteoplasty does not Compromise the Clinical Outcome of Subsequent Total Hip Arthroplasty

Hamed Vahedi Kafshgari, MD, Fulton, MD
Arash Aalirezaie, MD, Philadelphia, PA
George Komnos, MD, Larisa, Greece
Javad Parvizi, MD, FRCS, Philadelphia, PA

THA can be performed safely with excellent short-term outcome in patients with a history of FAO procedure in the same hip.

9:00 AM

PAPER 519

A Rationale for Conservative Treatment of Femoroacetabular Impingement

Rikin Patel, Houston, TX
Christopher R. Lenherr, MSc, Zurich, Switzerland
Joshua D. Harris, MD, Houston, TX
Philip C. Noble, MD, Houston, TX

Patients with mild FAI may benefit from conservative rehabilitation that reduces the risk of impingement by modifying the orientation of the hip joint during high risk activities.

9:12 AM

PAPER 520

Fifteen-Year Follow-Up Results of Cementless Modular Total Hip Arthroplasty with Subtrochanteric Shortening Osteotomy

Masaki Takao, MD, Suita, Japan
Hitotose Hamada, MD, Osaka, Japan
Takashi Sakai, MD, Suita, Japan
Nobuo Nakamura, MD, Suita, Japan
Nobuhiko Sugano, MD, Suita, Japan

Fifteen-year median follow-up result of cementless THA combined with subtrochanteric shortening osteotomy using the S-ROM modular stem was satisfactory, except for cases with hypoplastic femoral neck.

9:18 AM

PAPER 521

Clinical Outcomes of Total Hip Arthroplasty in Patients with Prior Periacetabular Osteotomy

Michael J. Moses, MD, New York, NY
Zlatan Cizmic, MD, Sterling Heights, MI
David Novikov, BS, Brooklyn, NY
Tylor Luthringer, MD, New York, NY
Nima Eftekhar, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
Lazaros A. Poultsides, MD, MSc, New York, NY

There is an incidence of patients that develop secondary osteoarthritis after PAO and require THA. We found that THA is an effective surgery in these patients with positive and improved outcomes.

9:24 AM

PAPER 522

The Fate of the Contralateral Hip in Patients Undergoing a Periacetabular Osteotomy: Are there Risk Factors for Disease Progression?

Cecilia Pascual-Garrido, MD, St. Louis, MO
Perajit Eamsobhana, MD, St. Louis, MO
Anita Sadhu, MD, St. Louis, MO
Jeffrey J. Nepple, MD, St. Louis, MO
John C. Clohisy, MD, St. Louis, MO

Contralateral hip pain, positive FADER test, and LCEA < 15 at time of index PAO were at highest risk of disease progression in the contralateral hip.

9:36 AM

PAPER 523

Hip Arthroscopy Volume in United States Residency Programs: Are New Trainees Prepared?

Christopher N. Carender, MD, Iowa City, IA
Alain G. Shamrock, MD, Iowa City, IA
Kyle Duchman, MD, Iowa City, IA
Natalie A. Glass, PhD, Iowa City, IA
Thomas S. Lynch, MD, New York, NY
Robert W. Westermann, MD, Iowa City, IA

These findings support the need for further investigation into the best methods for training residents interested in performing hip arthroscopy.
THURSDAY EDUCATIONAL PROGRAMS

9:42 AM  PAPER 524
Prevalence and Preoperative Risk Factors for Postoperative Deep Gluteal Syndrome Following Hip Arthroscopic Surgery
Soshi Uchida, MD, PhD, Kitakyushu, Japan
Hal D. Martin, DO, Dallas, TX
Kazuha Kizaki, MD, Kyoto, Japan
Akihisa Hatakeyama, MD, Kitakyushu, Japan
Fumitaka Hirano, MD, Fukuoka, Japan
Hitoshi Suzuki, MD, Houston, TX
Akinori Sakai, MD, PhD, Kitakyushu, Japan

We investigated predictors for DGS following hip arthroscopic surgery. One percent of patients were diagnosed as DGS. Predictors for DGS were female, general joint laxity, lower BMI, and multiple surgeries.

9:48 AM  PAPER 525
Preserving the Chondrolabral Junction During Arthroscopic Treatment of Pincer Impingement of the Hip Reduces the Rate of Capsular Adhesions
Mark S. Webb, FRCS (Ortho), MBBS, Newcastle Upon Tyne, United Kingdom
John O'Donnell, FRACS, Hawthorn, Australia
Brian Devitt, MD, Albert Park, Australia

Preserving the condrolabral junction when performing an acetabuloplasty for pincer type FAI, significantly reduces the rate of symptomatic adhesions requiring revision arthroscopy.

8:00 AM - 10:00 AM
Palazzo Ballroom J
Trauma VI (526-540): Upper Extremity
Moderators: Henry M. Broekhuyse, MD, Vancouver, BC, Canada and Wade T. Gordon, MD, Ashland, OR

8:00 AM  PAPER 526
Clavicle Nonunions: Plate and Graft Type Do Not Affect Healing Rates
Donald A. Wiss, MD, Los Angeles, CA
John Garlich, MD, Los Angeles, CA

Clavicle nonunions have a high rate of healing with plate osteosynthesis and biologic augmentation for selected patients.

8:06 AM  PAPER 527
Open Reduction and Tunneled Suspensory Device Fixation Versus Nonoperative Treatment for Grade 3 and 4 Acromioclavicular Joint Dislocations: The ACOMR Prospective, Randomized, Controlled Trial
Iain Murray, MD, PhD, Edinburgh, United Kingdom
Patrick Robinson, MBChB, MRCSED, Edinburgh, United Kingdom
Ewan B. Goudie, MBChB, Edinburgh, United Kingdom
Andrew D. Duckworth, FRCS, MBChB, Edinburgh, United Kingdom
Kathryn M. Clark, Edinburgh, United Kingdom
Christopher M. Robinson, MD, Edinburgh, United Kingdom

Prospective, randomized, controlled trial comparing nonoperative care vs. open reduction and tunneled suspension device fixation (ORTSD) for grade III or IV acromioclavicular joint dislocations.

8:12 AM  PAPER 528
Open Reduction and Tunneled Suspensory Device (ORTSD) Fixation of Displaced Lateral-End Clavicular Fractures: Medium and Long-Term Outcomes After Treatment
Iain Murray, MD, PhD, Edinburgh, United Kingdom
Katrina R. Bell, MBChB, MRCSED, Edinburgh, United Kingdom
Christopher M. Robinson, MD, Edinburgh, United Kingdom

This study assesses the functional outcomes and risk of long-term complications in a large series of patients treated using coracoclavicular tunneled loop fixation (CTLF).

8:36 AM  PAPER 531
Medial Epicondyle Fractures in Children and Adolescents: A Large Retrospective Review of 126 Patients
Tracy K. Kovach, MD, Torrance, CA
Michael P. Hall, MD, Harbor City, CA
Stephen J. Shymon, MD, Playa Del Rey, CA
Jack McGregor, Los Angeles, CA
Daniel Moossazadeh, Pacific Palisades, CA
Ronald A. Navarro, MD, Rolling Hills, CA

Our cohort of patients represents the largest review of the demographics and clinical outcomes of operatively and nonoperatively treated pediatric medial epicondyle fractures published to date.

8:48 AM  PAPER 532
Outcomes for Reverse Total Shoulder Arthroplasty After Failed Open Reduction Internal Fixation Versus Primary Reverse Total Shoulder Arthroplasty for Proximal Humerus Fractures
Nickolas T. Linkous, MD, Royal Oak, MI
Jonathan Wright, MD, Troy, MI
Denise Koueiter, Royal Oak, MI
J. M. Wiater, MD, Royal Oak, MI
Brett P. Wiater, MD, Birmingham, MI

Clinical and radiographic outcomes for reverse total shoulder arthroplasty after open reduction internal fixation versus primary reverse total shoulder arthroplasty for proximal humerus fractures.

8:54 AM  PAPER 533
Proximal Humerus Fracture Nonunion: Repair or Reverse Arthroplasty?
Kurtis D. Carlock, BS, New York, NY
Sanjit R. Konda, MD, New York, NY
Isabella Bianco, BA, New York, NY
Kyle Hildebrandt, BS, Flint, MI
Joseph D. Zuckerman, MD, New York City, NY
Kenneth A. Egol, MD, New York, NY

Patients undergoing operative repair of a proximal humerus fracture nonunion can expect good functional outcomes and postoperative range of motion.
9:00 AM  PAPER 534
Rotator Cuff Integrity and Function after Antegrade Humerus Nailing for Proximal and Shaft Fractures
Minoo K. Patel, FRACS, MD, Richmond, Australia

Rotator cuff integrity and function are preserved with a central cuff splitting approach medial to the footprint lateral to the rotator cable for humerus nail insertion.

Discussion

9:12 AM  PAPER 535
Healing the Index Humeral Nonunion Surgery: 117 Cases Treated with Plate Osteosynthesis and Graft Augmentation
Donald A. Wiss, MD, Los Angeles, CA
John Garlich, MD, Los Angeles, CA
Julie Agel, ATC, Seattle, WA

Plate osteosynthesis with biologic augmentation in select patients with humeral nonunions can yield high union rates.

9:18 AM  PAPER 536
Radial Nerve Injury and Recovery After Humeral Nonunion Surgery
Justin J. Koh, MD, Boston, MA
Amro Al-Houkail, MD, Halifax, NS, Canada
Kate Bellevue, MD, Seattle, WA
Henry A. Boateng, MD, Hershey, PA
Michael J. Bosse, MD, Charlotte, NC
Joseph Buck, MD, Charlotte, NC
Lisa K. Cannada, MD, Jacksonville, FL
Abigail Cortez, MD, Santa Monica, CA
Matthew R. Delarosa, MD, New Orleans, LA
Reza Firoozabadi, MD, Seattle, WA
Andrew Gudeman, BS, Greenwood, IN
Daniel S. Horwitz, MD, Danville, PA
Clifford B. Jones, MD, FACS, Phoenix, AZ
Laurence Kempton, MD, Indianopolis, IN
Peter C. Krause, MD, New Orleans, LA
Ross K. Leighton, MD, Halifax, NS, Canada
Andrew J. Marcantonio, DO, Wellesley, MA
Hassan R. Mir, MD, MBA, Tampa, FL
Saam Morshed, MD, San Francisco, CA
Brian Mullis, MD, Zionsville, IN
Shaan Patel, MD, Tampa, FL
Kathleen Ringenbach, BSN, RN, Hershey, PA
David Sanders, MD, London, ON, Canada
Sharul Saxena, Schaumburg, IL
Andrew H. Schmidt, MD, Minneapolis, MN
Stephen A. Sem, MD, Rochester, MN
Mhd Tayseer Shamaa, MBBS, Detroit, MI
Clay A. Spitler, MD, Madison, MS
Christina Tieszer, BSc, MSc, London, ON, Canada
Paul Tornetta, III, MD, Boston, MA
Joseph B. Walker, MD, Phoenix, AZ
Jerald Westberg, BA, Minneapolis, MN
Amrut Borade, MBBS, MS, Danville, PA
Orthopaedic Trauma Research Consortium

The purpose of this study was to determine the rate of radial nerve palsy after surgical humeral nonunion repair and to determine the predictive factors for palsy using data from multiple centers.

9:24 AM  PAPER 537
An Updated Systematic Review of Radial Nerve Palsy Rate and Recovery after Fractures of the Humerus: Is Nonoperative Treatment Still Better?
John Mangan, MD, Philadelphia, PA
Jack Graham, BS, Philadelphia, PA
Asif M. Ilyas, MD, Wayne, PA

A radial nerve palsy after closed humerus fractures surgically repaired had a statistically higher likelihood of regaining radial nerve function than patients treated nonsurgically.

Discussion

9:36 AM  PAPER 538
Olecranon Osteotomy Implant Removal Rates and Associated Complications
Alexander Meldrum, MD, Calgary, AB, Canada
Cory A. Kwong, MD, Calgary, AB, Canada
Katherine Archibald, Calgary, AB, Canada
Tanja Harrison, MPH, Calgary, AB, Canada
Prism Schneider, MD, PhD, Calgary, AB, Canada

Olecranon osteotomy implant removal rates and associated complications: a retrospective study showing increased removal rates for tension band wires when compared with other fixation types.

9:42 AM  PAPER 539
Symptomatic Implant Removal Following Mini-Fragment Plating for Olecranon Fractures
Sharon N. Babcock, MD, Houston, TX
Matthew Darlow, Houston, TX
Andrew M. Choo, MD, Houston, TX
John W. Munz, MD, Houston, TX
Joshua L. Gary, MD, Houston, TX
Timothy S. Achor, MD, Bellaire, TX

Mini-fragment plating is a reliable fixation construct and decreases the rate of symptomatic hardware removal following internal fixation of olecranon fractures.

9:48 AM  PAPER 540
Risk Factors for Elbow Joint Contracture Following Operative Repair of Traumatic Elbow Fracture
Kurtis D. Carlock, BS, New York, NY
Isabella Bianco, BA, New York, NY
Sanjit R. Konda, MD, New York, NY
Kenneth A. Egol, MD, New York, NY

Ulnohumeral dislocation, orthopaedic polytrauma, and limited elbow AOM at six weeks postoperatively are associated with significant contracture development following operative elbow fracture repair.

Discussion
PAPER PRESENTATIONS 541-555

8:00 AM - 10:00 AM
Room 4303

Spine V (541-555): Outcomes
Moderators: Sergio A. Mendoza-Lattes, MD, Durham, NC and Sheeraz Qureshi, MD, New York, NY

8:00 AM

Thirty-Day Mortality Following Surgery for Spinal Epidural Abscess: Incidence, Risk Factors, Predictive Algorithm, and Associated Complications
Jerry Y. Du, MD, Cleveland, OH
Adam J. Schell, MD, Cleveland Hts, OH
Chang-Yeon Kim, MD, Cleveland, OH
Nikunj Trivedi, MD, Cleveland, OH
Uri Ahn, MD, Bedford, NH
Nicholas U. Ahn, MD, Shaker Heights, OH

Six patient-related independent risk factors for mortality following surgery for SEA were identified. A predictive model for mortality based on number of risk factors ranged from 0.3% to 37.5%.

8:06 AM

The Incidence of Adjacent Segment Disease Following Cervical Fusion for Trauma
Timothy A. Moore, MD, Shaker Heights, OH
Iyooh Uchechukwu Davidson, MD, Shaker Heights, OH
Inyang Udo-inyang, MD, Cleveland, OH
Michael L. Kelly, MD, Cleveland, OH
Samuel Overley, MD, Cleveland, OH

Adjacent segment disease may be more of a consequence of the natural history of disease rather than a product of iatrogenic factors following cervical fusion procedures.

8:12 AM

Differences between PROMIS and Legacy Health Related Quality of Life Metrics in Patients with Different Combinations of Lumbar Spinal Diagnoses
Charla R. Fischer, MD, New York, NY
Nicholas Frangella, BS, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Leah Steinmetz, New York, NY
Mohamed A. Moawad, MPH, New York, NY
Peter G. Passias, MD, Westbury, NY
Themistocles S. Protopsaltis, MD, New York, NY
Thomas J. Errico, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY

PROMIS scores correlated with legacy HRQoLs and appear to have greater success in differentiating between the diagnoses of stenosis and disc herniation with stenosis.

8:24 AM

Does Day of Surgery Affect Length of Stay and Hospital Charges Following Lumbar Decompression?
Andrew M. Block, BS, Smyrna, GA
Dil V. Patel, BS, Chicago, IL
Brittany Haws, MD, Chicago, IL
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Fady Y. Hijji, MD, Dayton, OH
Ankur S. Narain, BA, Baltimore, MD
Jordan Guntin, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL

This study aims to determine if there is an association between surgery day and length of stay or hospital costs after primary minimally invasive lumbar decompressions.

8:30 AM

Benefits of Medical Optimization before Thoracolumbar Three-Column Osteotomies: An Analysis of 618 Patients
Andre Samuel, MD, New York, CT
Francis Lovecchio, MD, New York, NY
Avani Vaishnav, MBBS, New York, NY
Catherine Himo Gang, MPH, New York, NY
Steven McAnany, MD, St. Louis, MO
Todd J. Albert, MD, New York, NY
Sheeraz Qureshi, MD, New York, NY

Patients with optimized preoperative medical factors have significantly lower rates of serious medical complications.

8:36 AM

Complications of Spine Surgery in Super Obese Patients
Scott D. Daffner, MD, Morgantown, WV
Gennadiy A. Katsevman, MD, Morgantown, WV
John C. France, MD, Morgantown, WV
Sanford E. Emery, MD, MBA, Morgantown, WV
Shari Cui, MD, Morgantown, WV
Cara Sedney, MA, MD, Morgantown, WV

Super obese patients (BMI >50) undergoing spine surgery have a significantly higher complication rate than those with BMI<50 (30% vs. 14%), particularly for nonelective procedures (40% vs. 14%).

Discussion

8:48 AM

Hospital-Acquired Conditions Occur More Frequently in Elective Spine Surgery than for other Common Elective Surgical Procedures
Peter G. Passias, MD, Westbury, NY
Samantha Horn, BA, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Cole Bortz, BA, New York, NY
Nicholas Shepard, MD, New York, NY
Shaleen Vira, MD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Virginie Lafage, PhD, New York, NY

Spine surgery patients experienced an overall hospital-acquired condition rate of 3.3%, with surgical site infections occurring most frequently; these rates are higher than for bariatric and TJA.
8:54 AM PAPER 548
**Povidone-Iodine Irrigation Combined with Vancomycin Powder**
**Lowers Infection Rates in Pediatric Deformity Surgery**
*Lauren Agatstein, BA, MA, Sacramento, CA*
Flynn A. Rowan, MD, Tucson, AZ
Deepak Nallur, Fremont, CA
Blythe Durbin-Johnson, PhD, Davis, CA
Eric O. Klineberg, MD, Sacramento, CA
Yashar Javidan, MD, Sacramento, CA
Rolando F. Roberto, MD, Sacramento, CA

In a retrospective review of 475 patients, we found using Povidone-iodine with Vancomycin has the lowest surgical site infection rate in pediatric patients undergoing spinal deformity operation.

9:00 AM PAPER 549
**Late-Presenting Dural Tear: Incidence, Risk Factors, and Associated Complications**
*Wesley M. Durand, BS, Providence, RI*
John M. Depasse, MD, Providence, RI
Eren O. Kuris, MD, Providence, RI
Jaewon Yang, BA, Providence, RI
Alan H. Daniels, MD, Providence, RI

Late-presenting dural tears occurred in 2.0/1K spine surgery patients. Patients undergoing lumbar procedures, decompression, and with operative duration ≥250 minutes were at increased risk of LPDT.

9:12 AM PAPER 550
**Sagittal Imbalance Does Not Influence Cup Anteversion in Total Hip Arthroplasty Dislocations**
*Brittany Haws, MD, Chicago, IL*
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Philip Louie, MD, Chicago, IL
Srivisht Iyer, MD, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Andrew M. Block, BS, Smyrna, GA

The purpose of this study was to investigate the effect of spinal sagittal alignment on cup anteversion in total hip arthroplasty dislocation.

9:18 AM PAPER 552
**Bariatric Surgery Lowers Rates of Spinal Symptoms and Spinal Surgery in a Morbidly Obese Population**
*Peter G. Passias, MD, Westbury, NY*
Samantha Horn, BA, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Cole Bortz, BA, New York, NY
Michael J. Moses, MD, New York, NY
Daniel Sciubba, MD, Baltimore, MD
John Atthinos, FACS, MD, Forest Hills, NY
Virginie Lafage, PhD, New York, NY

Bariatric surgery lowered the rates of spinal symptoms and procedures in a morbidly obese population, providing evidence of additional health benefits to bariatric surgery.

9:30 AM PAPER 551
**Institution Wide Blood Management Protocol Reduces Transfusion Rates Following Spine Surgery**
*Claudette M. Lajam, MD, New York, NY*
Allyson Alfonso, BA, BS, Manalapan, NJ
Lorraine Hutzler, BA, New York, NY
Joseph A. Bosco III, MD, New York, NY
Jeffrey A. Goldstein, MD, Rye, NY

Patients who receive transfusions have an increased length of stay and increased risk of perioperative complications.

9:36 AM PAPER 553
**Modifiable and Non-Modifiable Factors Associated with Patient Satisfaction in Spine Surgery Patients and Other Orthopaedic Subspecialties**
*Leah Steinmetz, New York, NY*
Dennis Vasquez-Montes, MS, New York, NY
*Bradley C. Johnson, MD, New York, NY*
Aaron J. Buckland, FRACS, MBBS, New York, NY
Jeffrey A. Goldstein, MD, Rye, NY
John A. Bendo, MD, New York, NY
Thomas J. Errico, MD, New York, NY
Charla R. Fischer, MD, New York, NY

Based on 16,175 orthopaedic surgery surveys, provider communication was the strongest predictor of likelihood to recommend and provider rating followed by staff communication, ethnicity, and age.

9:42 AM PAPER 554
**Clinical Outcomes After Anterior Cervical Decompression and Fusion in Workers’ Compensation Patients**
*Daniel Tarazona, Philadelphia, PA*
Matthew Galetta, BA, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Alan S. Hilibrand, MBA, MD, Philadelphia, PA
Christopher Kepler, MD, Philadelphia, PA
Mark F. Kurd, MD, Bryn Mawr, PA
Kristen E. Radcliff, MD, Egg Harbor Township, NJ
Barrett I. Woods, MD, Egg Harbor Township, NJ
Gregory D. Schroeder, MD, Philadelphia, PA

Workers’ compensation (WC) patients had worse preoperative and postoperative HRQOL following ACDF for cervical radiculopathy. WC was also a predictor of worse postoperative neck and arm pain.

9:48 AM PAPER 555
**Epidemiology of Spine-Related Neurologic Injuries in Professional Baseball Players**
*Melvin Makhni, MBA, MD, New York, NY*
Frank Curriero, PhD, Baltimore, MD
Eric Leung, BA, New York, NY
Thomas E. Mroz, MD, Cleveland, OH
Christopher S. Ahmad, MD, New York, NY
Ronald A. Lehman, MD, New York, NY

Neurologic injuries of the cervical and lumbar spine cause significant disability among professional baseball players.
SYMPOSIA

11:00 AM - 12:30 PM
Room 4303

L Essential Knowledge and Surgical Techniques for Effective Management of Pathological Fractures: Case-Based Learning
Moderator: Francis Y. Lee, MD, PhD, New Haven, CT

Attendees will learn about essential knowledge and surgical techniques for effective management of pathological fractures through case-based learning and will participate in interactive discussion.

I. Interactive Case-Based Learning and Q&A: Panel & Audience
   Joseph Benevenia, MD, Newark, NJ

II. Technical Tips for Bone Augmentation
    Edward Y. Cheng, MD, Minneapolis, MN

III. Reconstruction of Pathological Acetabular and Pelvic Fractures
     Matthew R. DiCaprio, MD, Albany, NY

IV. Do Pharmacologic Agents Eradicate the Risks for Pathological Fractures?
    Michelle A. Ghert, MD, FRCSC, Oakville, ON, Canada

V. Complications and Management Strategies
    Bang H. Hoang, MD, Bronx, NY

VI. Essential Surgical Techniques for Pathological Femur Fractures
    Dieter Lindskog, MD, New Haven, CT

VII. What is the Health Care Burden of Pathological Fractures
     Benjamin J. Miller, MD, Iowa City, IA

VIII. Orthopaedic Reconstruction of Pathological Humerus and Shoulder Fractures
      Christian M. Ogilvie, MD, Minneapolis, MN

IX. Orthopaedic Management of Pathological Fractures in Spine
    Joseph H. Schwab, MD, Boston, MA

X. What Does Radiation Therapy do for Pain, Bone Preservation, and local Cancer Control
    Felasfa M. Wodajo, MD, Fairfax, VA

Room 4401

M Decision Making for Distal Radius Fractures: Optimizing Outcomes in 2019!
Moderator: Emil H. Schemitsch, MD, London, ON, Canada

A primary goal of the symposium will be to achieve consensus opinions on many current issues and controversies regarding the treatment of distal radius fractures.

I. How to Prevent and Avoid Complications: There is More Than Just the Fracture to Consider!
   Martin I. Boyer, MD, St. Louis, MO

II. Volar Locked Plating: How to Optimize the Reduction and the Fixation Construct
    Michael D. McKee, MD, FRCSC, Phoenix, AZ

III. Complex Fracture Dislocations: My Approach to Injuries From the Subtle to the Extreme!
    Aaron Nauth, MD, Toronto, ON, Canada

IV. Distal Radius Fracture Treatment Beyond Volar Plating.
    Bertrand Perey, MD, Belcarra, BC, Canada

V. Associated DRUJ Injury: The Basics for Success!
    David C. Ring, MD, Austin, TX

Palazzo Ballroom J

N Lumbar Degenerative Scoliosis: Controversies and Solutions
Moderator: Charla R. Fischer, MD, New York, NY

Lumbar degenerative scoliosis is a problem of the aging patient. This symposium will review the latest research, guidelines, and techniques for lumbar degenerative scoliosis surgery.

I. Solutions for a Global Alignment Deformity Problem
   Aaron J. Buckland, FRACS, MBBS, New York, NY

II. Solutions for a Local Lumbar Degenerative Problem
    Kolawole Jegede, MD, Brooklyn, NY

III. Alignment Goals in the Odler Patient
    Themistocles Protopsaltis, MD, New York, NY

INSTRUCTIONAL COURSE LECTURES

11:00 AM - 12:30 PM

321 Outpatient Arthroplasty: Same Day, Home Safe
Moderator: Keith R. Berend, MD, New Albany, OH
William G. Hamilton, MD, Alexandria, VA
Gregg R. Klein, MD, Paramus, NJ
Adolph V. Lombardi, Jr, MD, New Albany, OH

Understanding and addressing safely the reasons that surgeons and patients believe they ‘need’ a hospital admission is the cornerstone to outpatient arthroplasty. Course faculty review the surgical techniques and perioperative factors.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

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322 The Complex Primary Total Knee Arthroplasty Made Simple
Moderator: Steven J. MacDonald, MD, London, ON, Canada
Daniel J. Berry, MD, Rochester, MN
Jay R. Lieberman, MD, Los Angeles, CA
Bryan D. Springer, MD, Charlotte, NC
This ICL is designed to provide the adult reconstructive knee surgeon with strategies to manage the complex cases that present requiring total knee arthroplasty. The challenges addressed are common, and are problems surgeons need to address routinely and “on the spot”; therefore knowing and understanding the array of effective strategies in advance of the problem is essential. This ICL helps prepare the surgeon to address these problems by providing recommendations from leading surgeons on how to deal with these common, but complex, clinical scenarios and consensus opinion on the best way to solve problems by the whole panel. The format includes brief, focused didactic lectures; panel discussions; and case-based panel consensus.

323 Don’t Lose Your Nerve: Evaluation and Management of Neurogenic Pain in the Foot and Ankle
Moderator: Jason S. Ahuera, MD, Houston, TX
William M. Granberry, MD, Houston, TX
Lew C. Schon, MD, Baltimore, MD
Ashish Shah, MD, Birmingham, AL
This is a didactic, case-based ICL reviewing the diagnosis and management of neurogenic pain in the foot and ankle, including discussion of primary and revision surgical techniques.

324 Tumor Operations for the Non-Tumor Patient
Moderator: Peter Ferguson, MD, Toronto, ON, Canada
David M. Adelman, FACS, MD, Houston, TX
Allan E. Gross, MD, FRCSC, Toronto, ON, Canada
Richard L. McGough, MD, Pittsburgh, PA
Orthopaedic surgeons may encounter non-oncologic situations where tumor operations are necessary. The indications for and surgical techniques in these situations will be discussed.

326 Developmental Dysplasia of the Hip from Birth to Arthroplasty: Clear Indications and New Controversies
Moderator: Scott B. Rosenfeld, MD, Houston, TX
Travis H. Matheney, MD, Boston, MA
Jonathan G. Schoenecker, MD, Nashville, TN
Stuart L. Weinstein, MD, Iowa City, IA
This course, designed for both the general orthopaedist and the pediatric specialist, covers key concepts and controversies in diagnosis and treatment of developmental dysplasia of the hip from birth through adulthood.

327 Patient Satisfaction, Reimbursement, and Online Reputation Management
Moderator: Basil R. Besh, MD, Fremont, CA
Chrissy Daniels, MD, Salt Lake City, UT
Glenn Pfeffer, MD, Los Angeles, CA
Course faculty discusses patient satisfaction ratings and online reputation management, and their effect on orthopaedic practice and reimbursement.

328 Managing Challenging Glenoid Deformity in Shoulder Arthroplasty: Role of New Technology (Computer Navigation and PSI Guides)
Moderator: Mandeep Virk, MD, New York City, NY
Anthony A. Romeo, MD, Chicago, IL
Scott P. Steinmann, MD, Rochester, MN
Joseph D. Zuckerman, MD, New York City, NY
Glenoid is considered a weak link in shoulder arthroplasty. Latest advances in radiographic imaging, implant designs (augments), patient specific instrumentation and intra operative computer navigation have allowed for better understanding and correction of glenoid wear patterns during shoulder arthroplasty.

329 Value-Based Spine Care
Moderator: Melissa M. Erickson, MD, Chapel Hill, NC
Paul M. Huddleston, MD, Rochester, MN
Elizabeth M. Yu, MD, Columbus, OH
Value-based healthcare has emerged as a potential replacement of fee for service healthcare. Gain an understanding of each and the applications within spine surgery.

330 Adolescent Hip Pain: A Case-Based Approach to Common Causes
Moderator: John C. Clohisy, MD, St. Louis, MO
Asheesh Bedi, MD, Ann Arbor, MI
Young Jo Kim, MD, PhD, Boston, MA
Christopher M. Larson, MD, Edina, MN
Jeffrey J. Nepple, MD, St. Louis, MO
Christopher L. Peters, MD, Salt Lake City, UT
James Ross, MD, Lighthouse Point, FL
Klaus Siebenrock, MD, Bern, Switzerland
Ernest L. Sink, MD, New York, NY
Moritz Tannast, MD, Bern, Switzerland
Ira Zaltz, MD, Royal Oak, MI
This case-based ICL explores current evaluation and management strategies for adolescent patients with hip pain.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Multiple Ligament Knee Injuries – What Would You Do?

Moderator: Mark D. Miller, MD, Charlottesville, VA
Annunziato Amendola, MD, Durham, NC
Cory Edgar, MD, West Hartford, CT
Gregory C. Fanelli, MD, Danville, PA
Darren L. Johnson, MD, Lexington, KY
Bruce A. Levy, MD, Rochester, MN
Robert G. Marx, MD, New York, NY
Eric C. McCarty, MD, Boulder, CO
Claude T. Moorman, MD, Charlotte, NC
Gehron Tremel, MD, Albuquerque, NM
Brian C. Werner, MD, Charlottesville, VA

Using a series of actual knee multiple ligament injury (MLI) cases, faculty members discuss treatment options for a variety of conditions to include open injuries, four ligament tears, obese MLI, and delayed presentation.

Primary vs. Revision Modified Latarjet in Competitive Athletes: A Comparative Study of 100 Cases with a Minimum Two Years Follow Up
Luciano A. Rossi, MD, Buenos Aires, Argentina
Agustin Bertona, MD, Buenos Aires, Argentina
Ignacio Tanoira, MD, Buenos Aires, Argentina
Santiago Bongiovanni, Buenos Aires, Argentina
Gaston D. Maignon, MD, Buenos Aires, Argentina
Maximiliano Ranalletta, MD, Buenos Aires, Argentina

In competitive athletes with recurrent anterior glenohumeral instability, the modified Latarjet procedure produced excellent functional outcomes with most athletes returning to sport at the same level.

Baseline Characteristics and Two-Year Outcomes of Patients With and Without Maladaptive Psychopathological Traits Undergoing Shoulder Stabilization Surgery
Kyle Duchman, MD, Iowa City, IA
Brian R. Wolf, MD, Iowa City, IA
Natalie A. Glass, PhD, Iowa City, IA
Julie Y. Bishop, MD, Columbus, OH
Keith M. Baumgarten, MD, Sioux Falls, SD
Carolyn Hettrich, MD, MPH, Lexington, KY

Patients with shoulder instability and maladaptive psychopathological traits have decreased patient reported outcomes at baseline and two years following shoulder stabilization surgery.

Management of the Failed Latarjet Procedure: Outcomes of Revision Surgery with Fresh Distal Tibial Allograft
Matthew T. Provencher, MD CAPT MC USNR, Vail, CO
Giovanni Di Giacomo, MD, Roma, Italy
Andrew S. Bernhardson, MD, Avon, CO
Colin P. Murphy, BA, Washington, DC
Anthony Sanchez, BS, Miami Lakes, FL
Robert F. LaPrade, MD, PhD, Chanhassen, MN

This study aimed to determine the outcomes of patients who underwent revision surgery for a recurrent shoulder instability after a failed Latarjet procedure.

The Importance of Glenoid Bone Loss in the Outcomes of Arthroscopic Instability Repair: A Matched Cohort Analysis
Matthew T. Provencher, MD CAPT MC USNR, Vail, CO
Anthony Sanchez, BS, Miami Lakes, FL
Petar Golijanin, BS, Hanover, NH
Andrew S. Bernhardson, MD, Avon, CO

This study compared the outcomes of arthroscopic instability repair with and without glenoid bone loss to determine if there is a threshold GBL percentage that predicted success.
11:48 AM  PAPER 562
Primary Arthroscopic Stabilization for a First-Time Anterior Dislocation of the Shoulder: Long-Term Follow Up of a Randomized, Double-Blind Trial
Liam Yapp, MBCHB, MRCSED, Edinburgh, United Kingdom
Jamie A. Nicholson, MBCHB, MRCSED, Edinburgh, United Kingdom
Christopher M. Robinson, MD, Edinburgh, United Kingdom

This study reports the long-term follow up of a randomized, double-blind trial assessing the efficacy of primary arthroscopic stabilization for a first-time anterior dislocation of the shoulder.

11:54 AM  PAPER 563
First-Time Shoulder Dislocation in Young Active Patients: 10 Years of Experience in Acute Treatment
Angelo De Carli, MD, Rome, Italy
Riccardo Maria Lanzetti, Rome, Italy
Antonio Vadala, MD, Rome, Italy
Domenico Lupariello, Roma, Italy
Edoardo Gaj, Rome, Italy
Guglielmo Ottaviani, MD, Roma, Italy
Andrea Ferretti, MD, Rome, Italy

Surgical treatment of first episode of anterior glenohumeral dislocation in younger patients is associated with better clinical and functional results.

12:00 PM  PAPER 564
The Prevalence and Clinical Implications of Comorbid Back Pain for Those with Shoulder Instability: A Multicenter Orthopaedic Outcomes Network Shoulder Instability Cohort Study
Kevin J. Cronin, MD, Lexington, KY
Brian R. Wolf, MD, Iowa City, IA
Justin A. Magnuson, BA, Owensboro, KY
Cale Jacobs, PhD, Lexington, KY
Shannon Ortiz, MPH, Iowa City, IA
Keith M. Baumgarten, MD, Sioux Falls, SD
Julie Y. Bishop, MD, Columbus, OH
Matthew J. Bollier, MD, Iowa City, IA
Jonathan T. Bravman, MD, Golden, CO
Robert H. Brophy, MD, Chesterfield, MO
Charles L. Cox, MD, Nashville, TN
Brian T. Feeley, MD, San Francisco, CA
John A. Grant, MD, PhD, Ann Arbor, MI
Grant L. Jones, MD, Columbus, OH
John E. Kuhn, MD, Nashville, TN
ChunBong B. Ma, MD, San Francisco, CA
Robert G. Marx, MD, New York, NY
Eric C. McCarty, MD, Boulder, CO
Bruce S. Miller, MD, MS, Ann Arbor, MI
Adam J. Seidl, MD, Aurora, CO
Matthew V. Smith, MD, Town and Country, MO
Rick W. Wright, MD, St. Louis, MO
Alan Zhang, MD, San Francisco, CA
Carolyn Hettrich, MD, MPH, Lexington, KY

Our goals were to understand the role of anatomic models during the orthopaedic appointment and how their use can affect patient satisfaction and perceived empathy.

12:06 PM  PAPER 880
Is Complex Shoulder Instability All in the “Mind” or the “Muscles”?  
Anthony Howard, MD, Leeds, United Kingdom
Joanne L. Powell, PhD, Ormskirk, Lancashire, United Kingdom
David Hawkes, MD, Liverpool, United Kingdom
Joanna Gibson, MSc, Liverpool, United Kingdom
Graham Kemp, DM, Liverpool, United Kingdom
Simon Frostick, MD, FRCS, Liverpool, United Kingdom

The work establishes that there is no one muscle that causes instability of patients with type II/III shoulder instability and there are neural differences in both the white and the grey matter.

Discussion

PAPER PRESENTATIONS 565-573, 872-873 FREE NO TICKET REQUIRED

11:00 AM - 12:30 PM
Room 3401
Practice Management/Rehabilitation III (565-573, 872-873): Miscellaneous
Moderators: Robert A. Butler, MD, Starkville, MS and Stephen A. Parada, MD, Augusta, GA

11:00 AM  PAPER 565
Orthopaedic Surgeon Communication Skills: Perception of Empathy and Patient Satisfaction through the use of Anatomic Models
Edwin L. Portalatin-Perez, MD, San Juan, Puerto Rico
Dennys Rivera, BS, Carolina, Puerto Rico
Ricardo J. Abreu-Irizarry, MD, Carolina, Puerto Rico
Roberto Colon Miranda, MD, Guaynabo, Puerto Rico
Luis F. Carrazana-Suarez, MD, San Juan, Puerto Rico
Luis F. Lojo-Sojo, MD, Guaynabo, Puerto Rico

Our goals were to understand the role of anatomic models during the orthopaedic appointment and how their use can affect patient satisfaction and perceived empathy.

11:06 AM  PAPER 566
Are Online Commercial Ratings of Orthopaedic Surgeons Associated with Quality?  
Romil Shah, BA, Houston, TX
David W. Manning, MD, Chicago, IL
Karl Y. Bilimoria, MD, MS, Chicago, IL

Ratings for individual physicians on consumer ratings sites (Yelp, Vitals.com, etc.) often disagree. Younger doctors and higher volume practices were given significantly improved ratings.
11:12 AM  PAPER 567
Five Star Internet Reviews? Factors Influencing Patient Choice of Orthopaedic Surgeons

**Victor Hoang, DO, Las Vegas, NV**
Amit Parekh, DO, Las Vegas, NV
Trevor R. Call, DO, Las Vegas, NV
Kevin Sagers, DO, Las Vegas, NV
Shain Howard, DO, Henderson, NV
Jason Hoffman, DO, Las Vegas, NV
Randall E. Yee, DO, Las Vegas, NV
Randa Bascharon, DO, Las Vegas, NV
Daniel Lee, MD, Las Vegas, NV

Insurance coverage, surgeon’s status as in network provider, and out-of-pocket cost are more important than social media and online review websites in patient’s selection for their orthopaedic surgeon.

Discussion

11:24 AM  PAPER 568
Characterizing Extremely Negative Reviews of Total Joint Arthroplasty Practices and Surgeons on Yelp

**Jaymeson Arthur, MD, Phoenix, AZ**
David Etzioni, MD, MS, Phoenix, AZ
Adam Schwartz, MD, Phoenix, AZ

The vast majority of extremely negative reviews of TJA surgeons and practices on yelp.com were related to nonclinical concerns posted by patients who did not report prior surgery.

11:30 AM  PAPER 569
Orthopaedic Surgical Attire Influences Patient Perceptions in an Urban, Inpatient Setting

**John Jennings, MD, Philadelphia, PA**
Jaquelyn Kakalecik, BS, Whitehouse Station, NJ
Angelica Pinninti, BS, Cheltenham, PA
Frederick V. Ramsey, PhD, Philadelphia, PA
Christopher L. Haydel, MD, Aston, PA

Orthopaedic patients perceptions are influenced by their surgeon’s attire, with specific preferences in the outpatient setting having been established. This study elucidated inpatient preferences.

11:36 AM  PAPER 570
Ninety-Day Emergency Department Visits Following Total Joint Arthroplasty: Risk Factors and Causes for Return

**Sean P. Ryan, MD, Durham, NC**
Michael A. Bergen, BS, Durham, NC
Cierra S. Hong, BA, Durham, NC
Peter Formby, MD, Bethesda, MD
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

90-day emergency department visits following total joint arthroplasty may decrease with attention to modifiable risk factors and causes for patient return.

Discussion

11:48 AM  PAPER 571
The Role of Arthroscopic Simulation in Training and Teaching the Surgical Skills: A Systematic Review

**Sami Rashed, London, United Kingdom**
Philip M. Ahrens, FRCS (Ortho), London, United Kingdom
Nimalan Maruthainar, FRCS (Ortho), MBBS, Hertfordshire, United Kingdom

**Nicholas I. Garlick, FRCS, MBBS, Watford, United Kingdom**
Muhammad Z. Saeed, MRCS, FRCS (Orth), Cambridge, United Kingdom

Simulation training offers an exciting opportunity to develop arthroscopic skills and improve performance in the face on an out-dated traditional apprenticeship model.

11:54 AM  PAPER 572
Do Hospital Rankings Mislead Patients? Variability in National Rankings for Orthopaedic Surgery

**Romil Shah, BA, Houston, TX**
David W. Manning, MD, Chicago, IL
Karl Y. Bilimoria, MD, MS, Chicago, IL

There is little agreement among public hospital ranking systems (US News, Health Grades, Hospital Compare, etc.) due to wide variations in methodology; this likely causes confusion to patients.

12:00 PM  PAPER 573
Opioid Prescriptions by Orthopaedic Surgeons in a Medicare Population: Recent Trends, Potential Complications, and Characteristics of High Prescribers

**Venkat Boddapati, MD, New York, NY**
William N. Levine, MD, New York, NY
K. D. Riew, MD, New York, NY

Orthopaedic surgeons prescribe a large amount of opioids, however, the number of prescriptions written per surgeon and received per beneficiary have decreased between 2013-16 in the Medicare population.

Discussion

12:12 PM  PAPER 872
Initiatives to Reduce All-Cause 30-Day Postoperative Readmissions – An Experience from the Orthopaedic Service of a Single University Hospital

**Barkha N. Gurani, MD, Galveston, TX**
James Gwosdz, BA, Galveston, TX
Mark A. Foreman, MD, Galveston, TX
Ronald W. Lindsey, MD, Galveston, TX
Wayne Fischer, BS, MS, Galveston, TX

Reducing readmissions has become increasingly important with the changes brought about by the CMS. We found that a multimodal strategy involving departmental, health system, and patient-related initiatives improved hospital efficiency and effectively reduced readmission rates across all specialties.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
PAPER 873
Preparing Future Orthopaedic Surgeons, Musculoskeletal Clinician Researchers and Scientists for Academic Practice: A 12-Year Experience of the United States Bone & Joint Initiative / Bone & Joint Canada Young Investigator Initiative (YII) Program
Albert Yee, MD, Toronto, ON, Canada
J. Edward Puzas, PhD, Rochester, NY
Matthew B. Dobbs, MD, St. Louis, MO
Nancy Lane, MD, Sacramento, CA

The Young Investigator Initiative (YII) is a grant writing and career development program. Between 2005-17, 223 of 392 participants (57%) have received funding with monies exceeding $356M.

SHOWDOWNS®
1:30 PM - 2:30 PM
Room 3401
◆ SD2 Controversies in Spine Surgery
  Moderator: John G. Finkenberg, MD, San Diego, CA
  Jean-Jacques Abitbol, MD, San Diego, CA
  Michael D. Daubs, MD, Las Vegas, NV
  Edward J. Dohring, MD, Scottsdale, AZ
  Michael Fehlings, MD, Toronto, ON, Canada
  Zohar Ghogawala, MD, Burlington, MA
  Sandeep N. Gidvani, MD, Los Gatos, CA
  Choll W. Kim, MD, PhD, San Diego, CA
  Thomas E. Mroz, MD, Cleveland, OH
  David W. Polly, MD, Minneapolis, MN

  This symposia will host three hot topics in spine surgery. We will have a pro and con speaker for each topic and encourage active discussion and debate between the speakers as well as afford the opportunity for the audience to engage the speakers. Each individual topic will be moderated.

SYMPOSIA
1:30 PM - 3:30 PM
Palazzo Ballroom E
◆ The Shifting Paradigm in Shoulder Arthroplasty
  Moderator: Jay D. Keener, MD, St. Louis, MO

  Participants will be exposed to proven innovations to enhance outcomes after shoulder arthroplasty including outpatient arthroplasty outcomes, opioid-free clinical pathways, patient specific implant designs, and glenoid and humeral implant design evolution, and contemporary revision techniques.

  I. Humeral Stem Options
     George S. Athwal, MD, London, ON, Canada
  II. TSA vs RSA for OA in Patients Over 70
      Aaron M. Chamberlain, MD, St. Louis, MO
  III. Opioid-Free Shoulder Arthroplasty
       Nady Hamid, MD, Charlotte, NC
  IV. Glenoid Implant Design Options in 2019
      Surena Namdari, MD, MSc, Philadelphia, PA
  V. Revision Anatomic Arthroplasty- Is There Still a Role?
     Reza Omid, MD, Irvine, CA
  VI. Patient Specific Shoulder Arthroplasty
      John W. Sperling, MD, MBA, Rochester, MN
  VII. Outpatient Shoulder Arthroplasty
       Thomas (Quin) W. Throckmorton, MD, Germantown, TN

Room 4303
◆ P Bringing Diversity to the Orthopaedic Workforce 2019
  Moderator: Alexandra E. Page, MD, La Jolla, CA

  Building a gender, ethnic, and racially diverse workforce serves our specialty and patients. Leaders from academic private practices share specific strategies to change the paradigm

  I. Success With Racial/Ethnic Diversity in an Academic Program
     Eric W. Carson, MD, Charlottesville, VA
  II. Diversity: Why Does It Matter?
      Melvyn A. Harrington, MD, Houston, TX
  III. Developing Gender Diversity in Residency
       Amy L. Ladd, MD, Redwood City, CA
  IV. Building the Pipeline for Diversity: Perry Initiative
      Lisa L. Lattanza, MD, San Francisco, CA
  V. From a White Male Perspective: Why Diversity in Private Practice Matters and How to Achieve It
     Douglas W. Lundy, MD, MBA, Atlanta, GA
  VI. Why Racial Diversity Efforts May Have Failed Us Up to This Point?
      Scott E. Porter, MBA, MD, Greenville, SC
  VII. Success Building Faculty Gender Diversity
       Ann E. Van Heest, MD, Minneapolis, MN
INSTRUCTIONAL COURSE LECTURES

1:30 PM - 3:30 PM

341 Innovative Techniques in Revision Total Hip Arthroplasty

Moderator: Scott M. Sporer, MD, Wheaton, IL
Kevin B. Fricka, MD, Alexandria, VA
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
Paul F. Lachiewicz, MD, Chapel Hill, NC

This course reviews new techniques for management of common problems encountered in revision hip surgery. Acetabular component removal and revision with enhanced surface jumbo cups, new recurrent dislocation options, easier ways to perform extended trochanteric osteotomy (ETO) and fabricate antibiotic cement spacer, and management of the painful metal-metal and ceramic-ceramic hip are covered in video vignettes and case presentations.

342 Four Challenges in Revision Total Knee Arthroplasty: Exposure, Safe and Effective Component Removal, Bone Deficit Management, and Fixation

Moderator: Adolph V. Lombardi, Jr, MD, New Albany, OH
Thomas K. Fehring, MD, Charlotte, NC
David G. Lewallen, MD, Rochester, MN
Steven J. MacDonald, MD, London, ON, Canada

Four challenges in surgical techniques for revision total knee arthroplasty are addressed: surgical exposure, careful removal of components, bone deficit management, and fixation options.

343 The Land of Ligaments: Navigating Sprains, Strains, and Ruptures about the Foot and Ankle

Moderator: Kenneth Hunt, MD, Aurora, CO
Pieter D’Hooghe, MD, MSc, Doha, Qatar
Christopher W. DiGiovanni, MD, Waltham, MA
Jeremy J. McCormick, MD, Chesterfield, MO

A spectrum of ligamentous injuries about the ankle and foot are presented with emphasis on those occurring in sport. Case studies and videos are used to illustrate.

344 Musculoskeletal Ultrasound of the Extremities: Clinical and Ultrasonographic Correlation

Moderator: Eitan Melamed, MD, New York, NY
Mohini Rawat, DPT, Riverdale, NY
Wayne L. Stokes, MD, Park City, UT
William Walter, MD, New York, NY

Musculoskeletal ultrasonography is an important imaging modality that provides diagnostic accuracy at low cost. Its use and clinical pearls are discussed in this course.

345 Biologic Joint Preservation

Moderator: Jason L. Dragoo, MD, Redwood City, CA
Brian J. Cole, MD, MBA, Chicago, IL
S. Raymond Golish, MD, PhD, Jupiter, FL
Allston J. Stubbs, MD, Winston-Salem, NC

Description: The use of biologic and joint preservation strategies is becoming an important part of our practice. Learn state of the art techniques regardless of your subspecialty.

346 Managing Challenges in Thumb Carpometacarpal Arthritis

Moderator: Julie E. Adams, MD, Rochester, MN
Brandon E. Earp, MD, Boston, MA
Donald H. Lee, MD, Nashville, TN
David S. Zelouf, MD, King Of Prussia, PA

This ICL presents options for management of thumb carpometacarpal (CMC) arthritis and explores controversies and challenges. The role of nonoperative treatment and indications for surgery are explored.

347 Challenges in Pediatric Trauma: What We All Need to Know

Moderator: Martin J. Herman, MD, Philadelphia, PA
Keith D. Baldwin, MD, Philadelphia, PA
Craig P. Eberston, MD, Providence, RI
Pooya Hosseinzadeh, MD, St. Louis, MO

This two-hour instructional course lecture provides the most up-to-date information about challenges commonly seen in taking care of fractures in children.

348 State of the Art on Grafts and Patches in Rotator Cuff Surgery: Superior Capsule Reconstruction, Augmentation, Interposition, and Bio-Inductive Scaffolds

Moderator: Richard K. Ryu, MD, Santa Barbara, CA
F. Alan Barber, MD, Plano, TX
Mark H. Getelman, MD, Thousand Oaks, CA
John M. Tokish, MD, Scottsdale, AZ

This course focuses on incorporating innovative biologic grafts and patches in treating rotator cuff disease. Indications, complications, and advanced surgical techniques are emphasized.

349 Adult Lumbar Disc Herniation: Treatment, Complications, Outcomes, and Evidence-Based Data for Patient and Health Professional Counseling

Moderator: Brian J. Neuman, MD, Baltimore, MD
Amit Jain, MD, Baltimore, MD
Sang Kim, MD Los Angeles, CA
Robert Norton, MD, Boca Raton, FL

This course provides evidence-based treatment options for adult patients with lumbar disc herniation to aid surgeons in counseling patients and healthcare professionals.

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THURSDAY EDUCATIONAL PROGRAMS

350 Tendinopathy: What’s New, What Works?
Moderator: Geoffrey D. Abrams, MD, Stanford, CA
Neal L. Millar, MD, Glasgow, United Kingdom
George A. Murrell, MD, Kogarah, Australia
Scott A. Rodeo, MD, New York, NY
Room 4305
This session aims to update the practicing clinician on the best evidence of medical/surgical treatments of tendinopathy and discuss state of the art therapies.

351 Return to Play Criteria after Anterior Cruciate Ligament Reconstruction: From Basic Science to Clinical Outcome
Moderator: Fotios P. Tjoumakaris, MD, Ocean View, NJ
Bernard R. Bach, MD, River Forest, IL
Kevin B. Freedman, MD, Bryn Mawr, PA
Christopher D. Harner, MD, Houston, TX
Room 4105
This ICL is designed to optimize return to play after anterior cruciate ligament (ACL) reconstruction by evaluating everything that makes a successful return to play: graft biology and biomechanics, optimum surgical technique and rehabilitation, and evidence-based metrics helping to shape return to play.

355 What is Wrong with this Painful Total Knee Arthroplasty? Making the Diagnosis; Deciding When to Operate and What to Do
Moderator: Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN
Robert L. Barrack, MD, St. Louis, MO
Craig J. Della Valle, MD, Chicago, IL
James I. Huddleston, MD, Redwood City, CA
Michael H. Huo, MD, Dallas, TX
Harpal S. Khanuja, MD, Cockeysville, MD
Jay R. Lieberman, MD, Los Angeles, CA
Mark W. Pagnano, MD, Rochester, MN
Javad Parvizi, MD, Rochester, MN
Room 4101
Case-based ICL on contemporary assessment of painful TKA emphasizing how to make and treat specific diagnoses needing reoperation, and when not to reoperate.

386 Degenerative Spondylolisthesis: An Evidence-Based Assessment of Treatment Options and Outcomes
Moderator: John C. France, MD, Morgantown, WV
Ivan Cheng, MD, Redwood City, CA
Theodore J. Choma, MD, Columbia, MO
Scott D. Daffner, MD, Morgantown, WV
Michael Daubs, Las Vegas, NV
Daniel E. Gelb, MD, Baltimore, MD
Gregory Grubowski, MD, Columbia, SC
James D. Kang, MD, Boston, MA
Gregory Lopez, MD, Chicago, IL
Robert W. Molinari, MD, Pittsford, NY
Seth K. Williams, MD, Madison, WI
Room 4103
This course covers treatment options and outcomes for degenerative spondylolisthesis. The cases review diagnostic, nonsurgical, and surgical techniques to show interventions that the literature supports and those that need further investigation.

PAPER PRESENTATIONS 574-588

1:30 PM - 3:30 PM
Room 2102
Adult Reconstruction Hip V (574-588): Outcomes measures
Moderators: John T. Dearborn, MD, Menlo Park, CA and Gregory K. Deirmengian, MD, Newtown Square, PA

1:30 PM PAPER 574
Revision Rates of the Metal-on-Metal Hip Replacements: Update from a Single Center Data Study Comprising 3,013 Hip Replacements
Olli Lainiala, MD, PhD, Tampere, Finland
Aleksi Reito, MD, PhD, Tampere, Finland
Antti Eskelinen, MD, PhD, Tampere, Finland
The 15-year survivorship for stemmed metal-on-metal total hip replacements was 58.9% (95% CI, 55.0 to 62.8%) which were worse compared to hip resurfacings 84.0% (95% CI, 81.8 to 86.2%).

1:36 PM PAPER 575
Is Ceramic-on-Ceramic Superior to Ceramic-on-Highly X-Linked Polyethylene in Hip Arthroplasty?
Young-Hoo Kim, MD, Seoul, Republic of Korea
Jangwon Park, MD, MSc, San Diego, CA
Jun-Shik Kim, MD, Seoul, Republic of Korea
Our results of 148 patients (296 hips) who used COC and COHXLPE THA were similar, and thus, COHXLPE bearing could replace COC bearing to avoid squeaking and ceramic liner fracture.

1:42 PM PAPER 576
Virtual Hip Arthroplasty Surveillance: The Leicester Arthroplasty Remote Clinic
Andrew Brown, FRCS (Ortho), Leicester, United Kingdom
Reshid Berber, MBBS, BSc, St. Albans, United Kingdom
Sosanna Konstantinidou, MBA, MSc, Leicester, United Kingdom
Julie Dent, Leicestershire, United Kingdom
Joseph Dias, FRCS, MBBS, Leicester, United Kingdom
Arthroplasty remote clinics improve the long-term follow up of hip arthroplasty patients within a system that is cost effective and approved by patients while remaining aligned to national guidance.

Discussion
1:54 PM  PAPER 577
Wide Payment Variation for Total Hip and Knee Arthroplasty in Commercial Health Plans
David Terry, Watertown, MA
Stephen B. Murphy, MD, Boston, MA
William Murphy, BA, Winchester, MA
Jun Wang, Lexington, MA
Mah-Jabeen Soobader, PhD, Bedford, MA

Variation in physician payments among high-performing physicians can create serious disincentives for value-driven healthcare. For equally high-performing physicians, the difference in physician payment between the lowest and highest paid physicians was almost 2-fold. Commercial health plans need to reevaluate their fee-for-service contracting rates and appropriate reimbursement to align reimbursement with high performance.

2:00 PM  PAPER 578
Long-Term Results of Total Hip Arthroplasty in Patients with Ankylosing Spondylitis
Nicholas J. Clark, MD, Rochester, MN
Brandon R. Bukowski, MD, Rochester, MN
Michael J. Taunton, MD, Rochester, MN
Brett Freedman, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

In this series of over 325 primary THAs in patients with ankylosing spondylitis, dislocations were rare at 20 years (3.3%), but revisions for aseptic loosening, osteolysis, and fracture were common.

2:06 PM  PAPER 579
Patient-Reported Outcomes Based on Hospital Participation in a Bundle Payment Program for Hip and Knee Arthroplasty: Results From a Multicenter Pragmatic Study
Brook I. Martin, Salt Lake City, UT
Patricia Franklin, MD, MBA, Worcester, MA
Laurene S. Magder, Baltimore, MD
Vincent D. Pellegrini, MD, Charleston, SC

A multicenter study shows similar patient-reported improvements between hospitals that do or do not participate in bundled payment programs, dispelling concerns that these programs induce poor quality.

2:18 PM  PAPER 580
Early Results from The American Joint Replacement Registry: A Comparison with Other National Registries
Nathanael D. Heckman, MD, Los Angeles, CA
Hansel Ihn, MD, La Crescenta, CA
Michael Stefl, MD, Santa Monica, CA
Caryn Etkin, Rosemont, IL
Bryan D. Springer, MD, Charlotte, NC
Daniel J. Berry, MD, Rochester, MN
Jay R. Lieberman, MD, Los Angeles, CA

This study compares early reports from the AJRR to other national registries to identify similarities and differences in surgeon practice and potential topics for future analysis.

2:24 PM  PAPER 581
Return to Work After Total Joint Arthroplasty: A Predictive Model
Alexander Rondon, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Max Greenky, MD, Philadelphia, PA
Matthew Kheir, BS, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
James J. Purtill, MD, Philadelphia, PA

This prospective study provides an objective predictive model with respect to the impact of patient-specific and operation characteristics that influence return to work postoperatively.

2:30 AM  PAPER 582
Osteolysis after Primary Total Hip Arthroplasty using First-Generation Cross-Linked Polyethylene: Analysis using 3-Dimensional CT Scan at Follow Up of Fifteen Years
Seung-Hoon Baek, MD, PhD, Daegu
Jong Min Lee, Gyungsan, Republic of Korea
Kwang-Hwan Kim, Daegu, Republic of Korea
Yeon S. Lee, PhD, Gyungsan, Republic of Korea
Shin-Yoon Kim, MD, Daegu, Republic of Korea

THA using 1G XLPE showed low wear rate as well as low incidence of osteolysis at average follow up of 15 years. Longer-term studies will be necessary to determine if this XLPE will continue.

2:42 PM  PAPER 583
Does the Year of Implant Manufacture Affect Clinical Outcomes? Implications for over 350,000 Metal-on-Metal Hip Patients
Sean Bergiers, London, United Kingdom
Harry Hothi, BEng, MSc, Stanmore, United Kingdom
Johann Henckel, MD, London, United Kingdom
Antti Eskelinen, MD, PhD, Tampere, Finland
John Skinner, FRCS, London, United Kingdom
Alister Hart, FRCS, London, United Kingdom

Speculated tolerance changes in the most commonly implanted 36mm MOM hip worldwide did not significantly affect their bearing or taper wear rates, despite a decrease in their time to revision.

2:48 PM  PAPER 584
Does Taper Design Affect Taper Fretting Corrosion in Ceramic on Polyethylene Total Hip Arthroplasty? A Retrieval Analysis
Matthew Siljander, MD, Royal Oak, MI
Ali H. Sobh, MD, Dearborn, MI
Corinn Gehrke, BS, Royal Oak, MI
Samantha D. Wheeler, Royal Oak, MI
Michael A. Flierl, MD, Troy, MI
Drew D. Moore, MD, Royal Oak, MI
Erin A. Baker, PhD, Royal Oak, MI

Taper fretting and corrosion were observed in ceramic THA implants, and were greatest on implants with V40 and 16/18 tapers and lowest on implants with 12/14 tapers.

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2:54 PM PAPER 585
Allogeneic Blood Transfusion after Primary Hip and Knee Arthroplasty is Only Required in Patients with Preoperative Anemia: A Cohort of 9,034 Patients
Antony Palmer, MA, BMBC, Oxford, United Kingdom
Scott Fernquest, MBCHB, Oxford, United Kingdom
Akshay Shah, MBBS, MSc, Oxford, United Kingdom
Andrew J. Price, FRCS, Oxford, United Kingdom
Sion Glyn-Jones, MA MBBS, Oxford, United Kingdom
Andrew J. Carr, FRCS, Oxford, United Kingdom
Michael Murphy, MD, Oxford, United Kingdom
Benjamin J. Kendrick, MBBS, FRCS (Ortho), Oxford, United Kingdom

No patient undergoing primary hip or knee arthroplasty (n=9034) with a preoperative Hb>130g/L had a postoperative Hb<70g/L. Optimizing preoperative anemia may prevent allogeneic blood transfusion.

Discussion

3:06 PM PAPER 586
A Comprehensive Patient Blood Management Program Decreases Transfusions in Patients Undergoing Elective Total Hip and Knee Arthroplasty
Raj Amin, MD, Baltimore, MD
Mina Botros, MD, Baltimore, MD
Matthew J. Best, MD, Baltimore, MD
Julius K. Oni, MD, Baltimore, MD
Robert S. Sterling, MD, Owings Mills, MD
Harpal S. Khanuja, MD, Cockeysville, MD

A comprehensive patient blood management program is an efficacious method of reducing allogeneic blood product transfusion in elective total joint arthroplasty.

3:12 PM PAPER 587
Seven-Year Evaluation of Vitamin E Diffused Highly Crosslinked Polyethylene: A Randomized Controlled Trial Using Radiostereometric Analysis
Pakdee Rojanasopondist, BA, Cambridge, MA
Vincent Galea, BA, Boston, MA
Mogens B. Laursen, MD, PhD, Aalborg, Denmark
Charles R. Bragdon, PhD, Boston, MA
Henrik Malchau, MD, Cambridge, MA

This randomized controlled trial uses radiostereometric analysis to report in vivo wear properties for Vitamin E diffused, highly crosslinked polyethylene liners at 7-year follow up.

3:18 PM PAPER 588
Enhanced Recovery Protocol in Total Hip Arthroplasty is Safe and Cost Effective
Nader A. Nassif, MD, Newport Beach, CA
Travis Scudday, MD, Orange, CA
Zachary Thielen, MD, Irvine, CA
Robert S. Gorab, MD, Irvine, CA

Short stay enhanced recovery protocol for primary total hip arthroplasty is safe and cost effective.

Discussion

1:30 PM - 3:30 PM
Room 4401
Adult Reconstruction Knee VI (589-603, 877): Innovate Ideas in TKA
Moderators: Yair D. Kissin, MD, Upper Saddle River, NJ and James A. Keeney, MD, Columbia, MO

1:30 PM PAPER 589
Effectiveness and Safety of Epsilon Aminocaproic Acid (EACA) vs. Control in Minimizing Blood Loss in One Stage Bilateral Total Knee Arthroplasty: A Prospective Double Blind Randomized Controlled Trial
Sujit Kumar Tripathy, MBBS, MS, Bhubaneswar, India
P. Bhaskar Rao, MD, Bhubaneswar, India

Intraoperative administration of EACA significantly decreased the perioperative blood loss and postoperative transfusion rate compared with no antifibrinolytic therapy in one stage bilateral TKA.

Discussion

1:36 PM PAPER 590
Combined D-amino Acids with a Nanosolution with Magnetic Hyperthermia Successfully Disrupts Bacterial Biofilm – A Potential Treatment for Periprosthetic Joint Infection
Eric C. Abenojar, Cleveland, OH
Sameera Wickramasinghe, Cleveland, OH
Sarika Uppaluri, Eden Prairie, MN
Alison K. Klika, MS, Cleveland, OH
Jaiben George, Cleveland, OH
Wael K. Barsoum, MD, Weston, FL
Salvatore J. Frangiame, MD, MS, Wadsworth, OH
Carlos A. Higuera Rueda, MD, Weston, FL
Anna Cristina Samia, PhD, Cleveland, OH

Treatment with a novel combination of antibacterial MagDAA gel and magnetic hyperthermia is able to completely disrupt bacterial biofilm and may prove beneficial in the treatment challenges of PJI.

1:42 PM PAPER 591
Efficiency Gains from Modularized System Trays
Scott Denegre, PhD, New York, NY
Kaitlin M. Carroll, BS, New York, NY
Vanessa D. Valenzuela, BSME, MBA, New York, NY
David Grace, New York, NY
Scott Wiebel, MS, New York, NY
David J. Mayman, MD, New York, NY

A large volume orthopaedic center has redesigned the standard instrumentation sets to generate center specific trays that eliminate instrumentation and tray waste, creating a more efficient OR.
Thursday Educational Programs

1:54 PM  
**A Randomized Clinical Trial of Intra-Articular Injectates in Knee Osteoarthritis: A Comparison of Corticosteroid and NSAID Injections**  
*Sean Flynn, Ennis, Ireland*  
Marc O’Reilly, MB, ChB, Lismore, Ireland  
Iain Feeley, MBBS, MRCS(ED), Dublin, Ireland  
Martin Kelly, Dublin, Ireland  
Ciaran K. McDonald, MBBS, Tipperary, Ireland  
Eoin C. Sheehan, MD, FRCS (ORTH), Tullamore, Ireland

Double blinded RCT comparing the use of Ketorolac versus Methylprednisolone intra-articular injections in patients with knee osteoarthritis.

2:00 PM  
**High Dose Systemic Dexamethasone Reduces Early Postoperative Pain after Total Knee Arthroplasty: A Prospective Double-Blinded Randomized Controlled Trial**  
*Ping Keung Chan, FRCS (Ortho), Hong Kong, Hong Kong*  
Chi Wing Chan, Hong Kong, Hong Kong  
Chi Wai Cheung, Hong Kong, Hong Kong  
Peter K. Chiu, MD, Pokfulam, Hong Kong  
Chunhoi Yan, FRCS, MBBS, Hong Kong, Hong Kong  
Chung Yu Fai, Hong Kong, Hong Kong

Patients receiving 16mg dexamethasone had less postoperative acute pain with no increased risks of complications when compared with 8mg dexamethasone and placebo. An incorporation of 16mg dexamethasone to the multimodal analgesia may be considered.

2:06 PM  
**Tranexamic Acid vs. Aminocaproic Acid in Total Knee Arthroplasty: A Randomized Controlled Trial**  
*Kendall E. Bradley, MD, Durham, NC*  
Sean P. Ryan, MD, Durham, NC  
Colin T. Penrose, MD, Durham, NC  
Stuart A. Grant, MBCHB, Durham, NC  
Samuel S. Wellman, MD, Durham, NC  
David E. Attarian, MD, Durham, NC  
Michael P. Bolognesi, MD, Durham, NC

Our data supports that postoperative losses may be more in the EACA group, however the overall clinical impact in transfusion was minimal as there was only one transfusion in the group.

2:18 PM  
**New 5-Factor Modified Frailty Index Predicts Morbidity and Mortality in Primary Total Knee Arthroplasty**  
*Sophia A. Traven, MD, Charleston, SC*  
Russell A. Reeves, MD, Charleston, SC  
Harris Slone, MD, Charleston, SC  
Zeke Walton, MD, Charleston, SC

The mFI-5 is an independent predictor of postoperative complications including life-threatening medical complications, surgical site infections, hospital readmission, and mortality following TKA.

2:24 PM  
**Comparison of Aspirin with Edoxaban in Prevention of Venous Thromboembolism after Total Joint Arthroplasty: 700 Cases Evaluated by Venography**  
*Koh Shimizu, MD, Chiba, Japan*  
Sara Shimizu, MD, Chiba, Japan  
Shigeo Hagiwara, MD, PhD, Chiba, Japan

Incidence of DVT was low in both THA cases with aspirin (4.6%) and edoxaban (5.3%). However, in TKA cases, the incidence was 35.5% with aspirin which was much higher than 11.5% with edoxaban.

2:30 PM  
**Prospective Evaluation of Neuromuscular Electrical Stimulation for Improving Outcomes Following Total Knee Arthroplasty**  
*Alison K. Klika, MS, Cleveland, OH*  
George Yakubek, DO, Cleveland, OH  
Gary J. Calabrese, DPT, Cleveland, OH  
Wael K. Barsoum, MD, Weston, FL  
Carlos A. Higuera Rueda, MD, Weston, FL

The use of NMES following TKA showed improved functional outcomes (timed up and go test) when compared to control patients, supporting its efficacy in quadriceps strengthening.

2:42 PM  
**Using Artificial Intelligence to Improve Patient Specific Preoperative Plans for Total Knee Arthroplasty**  
*Adriaan Lambrechts, Leuven, Belgium*  
Raf De Vloo, Brasschaat, Belgium  
Roel Wirix-Speetjens, Leuven, Belgium

Artificial intelligence can be used to create preoperative plans for TKA which require only half the amount of changes by the surgeon compared to the manufacturers default proposed plan.

2:48 PM  
**Should We Be Checking a Preoperative Urinalysis Prior to Total Knee Arthroplasty?**  
*Daniel J. Johnson, MD, Chicago, IL*  
Matthew J. Hartwell, MD, Chicago, IL  
Ryan E. Harold, MD, Chicago, IL  
Joseph A. Weiner, MD, Chicago, IL  
David W. Manning, MD, Chicago, IL

A urinary tract infection present at time of total knee arthroplasty increases the risk of multiple postoperative complications and reoperation.
2:54 PM  PAPER 600
Development and Validation of a Machine-Learning Algorithm for Patient Length of Stay and Cost Forecasting after Primary Total Knee Arthroplasty in the Value-Based Era
Sergio M. Navarro, Houston, TX
Eric Y. Wang, BS, Houston, TX
Heather Haeberle, BS, Houston, TX
William C. Frankel, BS, Houston, TX
Brendan M. Patterson, MD, Cleveland, OH
Prem Ramkumar, MD, MBA, Cleveland Heights, OH
Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure

We developed and validated a machine-learning algorithm using preoperative big data to predict length of stay (LOS) and inpatient costs after primary TKA.

Discussion

3:06 PM  PAPER 601
Utilization of a Rep-Less Model in Primary Joint Arthroplasty: Lessons Learned
Morteza Meftah, MD, New York, NY
Ira H. Kirschenbaum, MD, Bronx, NY
Standardization of the trays and implants, and distribution of the responsibilities between operating room circulating nurses, technicians, and surgeon are essential for rep-less model.

Discussion

3:12 PM  PAPER 602
Virtual Exercise Rehabilitation In-Home Therapy: A Randomized Study
Janet Bettger, Durham, NC
Cindy Green, Durham, NC
Dajuanica N. Holmes, Durham, NC
Anang Chokshi, DPT, San Diego, CA
Richard C. Mather, MD, Durham, NC
Bryan T. Hoch, DPT, PT, Durham, NC
Arthur De Leon, MPT, Durham, NC
Frank V. Aluisio, MD, Greensboro, NC
Thorsten M. Seyler, MD, PhD, Durham, NC
Daniel J. Del Gaizo, MD, Chapel Hill, NC
John B. Chiavetta, MD, Raleigh, NC
Laura Webb, BS, Durham, NC
Vincent Miller, Durham, NC
Joseph M. Smith, MD, PhD, San Diego, CA
Eric D. Peterson, MD, MPH, Durham, NC
VERITAS Trial

Among patients receiving TKA, virtual PT significantly lowered three-month healthcare costs relative to usual care, while effectiveness and safety were similar.

Discussion

3:18 PM  PAPER 603
Usefulness of Perioperative Lab Tests in Total Hip and Knee Arthroplasty: Are They Necessary for All Patients?
Marc Angerame, MD, Denver, CO
David Holst, MD, Denver, CO
Alexandra J. Phocas, BS, Denver, CO
Michael A. Williams, Littleton, CO
Douglas A. Dennis, MD, Denver, CO
Jason M. Jennings, MD, Denver, CO

This study evaluates the usefulness of routine, perioperative laboratory tests, and identifies risk factors for laboratory-associated interventions.

3:24 PM  PAPER 604
An Early Look at Patient-Reported Outcome Data from the American Joint Replacement Registry
Caryn Etkin, Rosemont, IL
Peter Shores, Rosemont, IL
September Cahue, Rosemont, IL
Kevin J. Bozic, MD, MBA, Austin, TX

This study evaluated the differences between submitters of patient-reported outcome measures (PROMs) and non-submitters and survey response rates in a national clinical data registry.

Discussion

1:30 PM - 3:30 PM
Palazzo Ballroom L
Sports Medicine VI (604-618, 874): Knee I
Moderators: ChunBong B. Ma, MD, San Francisco, CA and Seth Sherman, MD, Columbia, MO

1:30 PM  PAPER 604
Amniotic Suspension Allograft was superior to Saline and Hyaluronic Acid for Treatment of Knee Osteoarthritis in a Randomized Controlled Multi-Center Trial
Jack Farr, MD, Greenwood, IN
Andreas H. Gomoll, MD, New York, NY
Kelly Kimerling, MS, PhD, Birmingham, AL
Katie C. Mowry, MS, PhD, Birmingham, AL

In this 200 patient clinical trial, subjects receiving ASA treatment showed greater improvement in PROs compared to HA and saline, providing strong evidence for the use of ASA in OA.

1:36 PM  PAPER 605
The Timing of Corticosteroid Injections following Knee Arthroscopy Influence Infection Risk
Jourdan M. Cancienne, MD, Charlottesville, VA
Michelle Kew, MD, Charlottesville, VA
Eric W. Carson, MD, Charlottesville, VA
Mark D. Miller, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

Given the increased risk of postoperative infection demonstrated in the present study, corticosteroids should not be administered within 4 weeks following simple arthroscopic knee procedures.
1:42 PM  PAPER 606
Leukocyte-Poor Platelet-Rich Plasma as a Treatment for Patellar Tendinopathy: A Double Blind Randomized Controlled Trial
Jason L. Dragoo, MD, Redwood City, CA
Eric J. Strauss, MD, Scarsdale, NY
Amy Wasterlain, MD, New York, NY
Hien Pham, MD, MD, New York, NY
Both dry-needling and leukocyte-poor platelet-rich plasma led to improved clinical outcomes in patients with symptomatic patellar tendinopathy at 6 months.

1:54 PM  PAPER 607
Evaluation of Healing after Medial Meniscal Root Repair by Using Second-Look Arthroscopy, Clinical and Radiological Criteria
Sung Sahn Lee, MD, Seoul, Republic of Korea
Jin H. Ahn, MD, Seoul, Republic of Korea
Junho Kim, Seoul, Republic of Korea
Bong Soo Kyung, MD, Seongnam, Republic of Korea
Joon Ho Wang, MD, Seoul, Republic of Korea
Successful healing of MMRT is associated with more favorable clinical outcomes and protective effects against the progression of knee osteoarthritis.

2:00 PM  PAPER 608
Long-Term Results after Repair of Isolated Meniscus Tears in Patients 18 Years and Younger: An 18-Year Follow-Up Study
Michelle Hagmeijer, MD, Utrecht, Netherlands
Nicholas I. Kennedy, MD, Yakima, WA
Adam J. Taglieri, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Daniel B. Saris, MD, Ph D, Rochester, MN
Diane L. Dahm, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN
Long-term results after repair of isolated meniscus tears in patients 18 years and younger: an 18-year follow-up study.

2:06 PM  PAPER 609
Inside-Out Meniscal Repair: Improved Outcomes Can Be Achieved Regardless of the Anatomic Zone of Meniscal Tear
Mark Cinque, BS, Vail, CO
Nicholas Dephillipo, ATC, Avon, CO
John Begly, MD, New York, NY
Jonathan A. Godin, MD, Roanoke, VA
Buru G. Moatshe, Oslo, Norway
Jorge Chahla, MD, PhD, Santa Monica, CA
Robert F. LaPrade, MD, PhD, Chanhassen, MN
This study reports significant improvements in all patient reported outcomes with inside-out meniscal repair, regardless of meniscal zone location.

2:18 PM  PAPER 610
Adverse Outcomes Following Arthroscopic Partial Meniscectomy: A Study of 700,000 Procedures Using the National Hospital Episode Statistics Database for England, United Kingdom
Simon G. Abram, MA, MRCS, Oxford, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
David J. Beard, MD, MSc, Oxford, United Kingdom
Andrew J. Price, FRCS, Oxford, United Kingdom
In this national dataset study, serious medical complications were detected less frequently after arthroscopic meniscectomy than the general population. Risk of infection and PE was slightly elevated.

2:24 PM  PAPER 611
Return to Sport After Concomitant Meniscal Allograft Transplant and Distal Femoral Varus Osteotomy
Brian J. Cole, MD, MBA, Chicago, IL
Richard N. Puzzitiello, Chicago, IL
Joseph Liu, MD, Chicago, IL
Grant Garcia, MD, Mercer Island, WA
Michael Redondo, MA, Burr Ridge, IL
David R. Christian, BS, Oconomowoc, WI
Adam B. Yanke, MD, Chicago, IL
In a young and active population, concomitant MAT and DFVO afforded a high rate of return to sports at an average of 16.9 months postoperatively, although only 46.7% returned to preinjury level.

2:30 PM  PAPER 612
Proximal Tibial Osteotomy with a Low Profile Polyetheretherketone Implant: A Single Center Experience
Mario Hevesi, MD, Zumbrota, MN
Aaron J. Krych, MD, Rochester, MN
Isabella T. Wu, BA, Rochester, MN
Vishal Desai, BS, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Proximal tibial osteotomy with a low profile polyetheretherketone implant: a single center experience.

2:42 PM  PAPER 613
The Effect of Lateral Opening Wedge Distal Femoral Varus Osteotomy on Tibiofemoral Contact Mechanics through Knee Flexion
James Wylie, MD, Jamaica Plain, MA
Bastian Scheiderer, Munich, Germany
Elifho Obopilwe, Farmington, CT
Craig Macken, BS, Greenwich, CT
Colin Pavano, BA, Avon, CT
Joshua Baldino, Newington, CT
Ryan M. Bell, West Hartford, CT
Robert A. Arciero, MD, Farmington, CT
Florian B. Imhoff, MD, Farmington, CT
Biomechanically, distal femoral osteotomy for genu valgum is most effective at unloading the lateral compartment in full extension. A lesser effect is seen at knee flexion angles up to 75 degrees.
**Thursday Educational Programs**

**2:48 PM**

**PAPER 614**

**Failures Following Isolated Osteochondral Allograft Transplantation of the Knee are Associated with Increased Defect Size**

*Simon Lee, MD, Ann Arbor, MI*
*Rachel M. Frank, MD, Boulder, CO*
*David R. Christian, BS, Oconomowoc, WI*
*Brian J. Cole, MD, MBA, Chicago, IL*

Increasing defect size is associated with failures and possibly inferior outcomes following isolated osteochondral allograft transplantation.

**2:54 PM**

**PAPER 615**

**Opioid Use, Perioperative Risks, and Associated Postoperative Complications with Arthroscopic Knee Surgery**

*Ryan Ridenour, MD, Hummelstown, PA*
*Aditya Yadavalli, BS, Hummelstown, PA*
*Dijibril Ba, MPH, Palmyra, PA*
*Guodong Liu, PhD, Hershey, PA*
*Jesse E. Bible, MD, MHS, Hershey, PA*
*Michael C. Aynardi, MD, Hershey, PA*
*Matthew R. Garner, MD, Hershey, PA*
*Douglas L. Leslie, PhD, Hershey, PA*
*Thomas A. Lloyd, PhD, Hershey, PA*
*Aman Dhawan, MD, Hershey, PA*

Penn State Orthopaedics Opioid Study Group

We analyzed specific patient preoperative diagnoses and medication histories and found numerous strongly associated with prolonged postoperative opioid usage, even out to 1-year postoperatively.

**3:06 PM**

**PAPER 616**

**Complications and Risk Factors for Patellar Redislocation following Medial Patellofemoral Ligament Reconstruction**

*Tracey Didinger, MD, Los Angeles, CA*
*Anthony Essilfie, MD, Los Angeles, CA*
*Brian Suh, MD, Baldwin Park, CA*
*Rebecca Butler, Pasadena, CA*
*David O. DeWitt, PA, La Verne, CA*
*Raffy Mirzayan, MD, Baldwin Park, CA*

This is the largest series of MPFLR in the literature and reveals that MPFLR is a very successful operation for patella stabilization with a low (5.1%) redislocation rate and 10.5% complication rate.

**3:12 PM**

**PAPER 617**

**Lateral Trochlear Inclination and Patellar Tilt in Children and Adolescents: Modified Measurements to Characterize Patellar Instability**

*Sheeba Joseph, MD, MS, Simsbury, CT*
*Christopher Cheng, BS, New Fairfield, CT*
*Matthew J. Solomito, PhD, Farmington, CT*
*James L. Pace, MD, Farmington, CT*

Modified lateral trochlear inclination and patellar tilt measurements have better inter- and intra-rater reliability and may better characterize patellar instability in children and adolescents.

**3:18 PM**

**PAPER 618**

**Abnormal Trochlear Length Relates to Trochlear Dysplasia in Knees with Patellar Instability**

*Mieho J. Tanaka, MD, Baltimore, MD*
*John J. Elias, PhD, Akron, OH*
*Andrew J. Cosgarea, MD, Lutherville, MD*

We assessed the sagittal length of the trochlea and its relationship to trochlear dysplasia by describing the location of its proximal extent in knees with and without patellar instability.

**3:24 PM**

**PAPER 874**

**Meniscectomy Versus Meniscal Repair on Time to Unicompartmental and Total Knee Arthroplasty**

*Jennifer Kurowicki, MD, Jersey City, NJ*

Patients with degenerative meniscal tears undergoing meniscectomy or meniscus repair can expect similar timeline to subsequent UKA.

**Discussion**

**PAPER PRESENTATIONS 619-633**

1:30 PM - 3:30 PM

**Palazzo Ballroom J**

**Spine VI (619-633): Adult Spine Deformity II**

Moderators: Samuel K. Cho, MD, Englewood Cliffs, NJ and Stuart H. Hershman, MD, Boston, MA

**1:30 PM**

**PAPER 619**

**Changes in Health Related Quality of Life Measures Associated with Degree of Proximal Junctional Kyphosis**

*Peter G. Passias, MD, Westbury, NY*
*Renaud Lafage, New York, NY*
*Virginia Lafage, PhD, New York, NY*
*Justin S. Smith, MD, Charlottesville, VA*
*Bassel Diebo, MD, Brooklyn, NY*
*Breton G. Line, BS, Denver, CO*
*D. Kojo Hamilton, Pittsburgh, PA*
*Alexandra Soroceanu, MD, Halifax, NS, Canada*
*Pierce D. Nunley, MD, Shreveport, LA*
*Munish C. Gupta, MD, St. Louis, MO*
*Khaled M. Kebaish, MD, Baltimore, MD*
*Frank A. Segreto, BS, Oakdale, NY*
*Cole Bortz, BA, New York, NY*
*Samantha Horn, BA, New York, NY*
*Douglas C. Burton, MD, Kansas City, KS*
*Robert A. Hart, MD, Seattle, WA*
*Christopher Ames, MD, San Francisco, CA*
*Robert S. Bess, MD, Castle Rock, CO*
*Christopher I. Shaffrey, MD, Charlottesville, VA*
*Frank J. Schwab, MD, New York, NY*

International Spine Study Group

Our current Health Related Quality of Life parameters aren’t reliable metrics for capturing the diagnosis of proximal junctional kyphosis.
1:36 PM  PAPER 620
The Consequence of Nonoperative Management in Adult Spinal Deformity: Long-Term Durability of Alignment in Nonoperative and Operative Patients
Peter G. Passias, MD, Westbury, NY
Cole Bortz, BA, New York, NY
Renaud Lafage, New York, NY
Justin S. Smith, MD, Charlottesville, VA
Breton G. Line, BS, Denver, CO
Gregory M. Mundis, MD, San Diego, CA
Munish C. Gupta, MD, St. Louis, MO
Jeffrey Gum, MD, Louisville, KY
Samantha Horn, BA, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Daniel Sciubba, MD, Baltimore, MD
Eric O. Klineberg, MD, Sacramento, CA
Douglas C. Burton, MD, Kansas City, KS
Robert A. Hart, MD, Seattle, WA
Frank J. Schwab, MD, New York, NY
Robert S. Bess, MD, Castle Rock, CO
Christopher I. Shaffrey, MD, Charlottesville, VA
Virginie Lafage, PhD, New York, NY
International Spine Study Group

Non-op ASD treatment was associated with decline in spinopelvic alignment, inferior clinical outcomes, and higher rates of hypertension and pulmonary comorbidities compared to operative ASD treatment.

1:42 PM  PAPER 621
Osteotomy, Correction, and Short Fusion for Adult Spinal Deformity Using One Manufacturer’s Direct Vertebral Rotation System in Postmenopausal Osteoporosis Women
Masahiro Kanayama, MD, Hakodate, Japan
Tomoyuki Hashimoto, MD, Hakodate, Japan
Fumihiro Oha, MD, Hakodate, Japan
Akira Iwata, MD, Sapporo, Japan
Yukitoshi Shimamura, MD, Hakodate, Japan
Norimasa Iwasaki, Sapporo, Japan

Spinal osteotomy with one manufacturer’s DVR system allowed effective sagittal-plane correction in osteoporosis women. Failure of proximal and distal foundations occurred in 0% and 12%; revision required in 8%.

1:54 PM  PAPER 622
Predicting Major Transfusion in Patients Undergoing Surgery for Adult Spinal Deformity
Tina Raman, MD, Baltimore, MD
Aaron J. Buckland, FRACS, MBBS, New York, NY,
Thomas J. Errico, MD, New York, NY

ASD patients who required major intraoperative blood transfusion were significantly older, had higher ASA scores, underwent fusion > 12 levels, and more commonly had a preoperative hemoglobin < 13.0.

2:00 PM  PAPER 623
Incidence of Acute, Progressive, and Delayed Proximal Junctional Kyphosis over an Eight-Year Period in Adult Spinal Deformity Patients
Peter G. Passias, MD, Westbury, NY
Frank A. Segreto, BS, Oakdale, NY
Renaud Lafage, New York, NY
Virginie Lafage, PhD, New York, NY
Justin S. Smith, MD, Charlottesville, VA
Breton G. Line, BS, Denver, CO
Gregory M. Mundis, MD, San Diego, CA
Pierce D. Nunley, MD, Shreveport, LA
Cole Bortz, BA, New York, NY
Samantha Horn, BA, New York, NY
Alan H. Daniels, MD, Providence, RI
Munish C. Gupta, MD, St. Louis, MO
Jeffrey Gum, MD, Louisville, KY
D. Kojo Hamilton, Pittsburgh, PA
Eric O. Klineberg, MD, Sacramento, CA
Douglas C. Burton, MD, Kansas City, KS
Robert A. Hart, MD, Seattle, WA
Frank J. Schwab, MD, New York, NY
Robert S. Bess, MD, Castle Rock, CO
Christopher I. Shaffrey, MD, Charlottesville, VA
Christopher Ames, MD, San Francisco, CA
International Spine Study Group

Overall PJK incidence was 59.1% from 2009-2016. Despite an increased incidence of progressive PJK in recent years, declines in acute and delayed PJK incidence were observed.

2:06 PM  PAPER 624
Vertebral Column Resection for Early Onset Scoliosis: Indications, Utilization, and Outcomes
Anna McClung, RN, Albuquerque, NM
Gregory M. Mundis, MD, San Diego, CA
Jeff Pawelek, San Diego, CA
Nima Kabirian, MD, Los Angeles, CA
Sumeet Garg, MD, Aurora, CO
Burt Yaszay, MD, San Diego, CA
Ohe neba Boachie-Adjei, MD, New York, NY
James O. Sanders, MD, Rochester, NY
Paul D. Sponseller, MD, Baltimore, MD
Francisco S. Perez-Grueso, MD, Madrid, Spain
William F. Lavelle, MD, East Syracuse, NY
John B. Emans, MD, Boston, MA
Charles E. Johnston, MD, Dallas, TX
Behrooz A. Akbarnia, MD, San Diego, CA
Children’s Spine Study Group
Growing Spine Study Group

EOS treated with VCR showed correction of major curve of 69% and also demonstrated increases in spinal and thoracic height. Complication rate was 33% with 57% being IONM/neuro related.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
2:18 PM  PAPER 625
The Soft Landing: Proximal Laminar Hooks are Associated with Decreased Rate of Proximal Junctional Kyphosis in Spinal Fusion for Adult Spinal Deformity compared to Pedicle Screw Fixation
Bryce A. Basques, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Michael T. Nolte, MD, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Kamran Movassaghi, MD, Fresno, CA
Dong Gue Oh, BS, Chicago, IL
Joseph Michalski, BS, MPH, Commack, NY
Howard S. An, MD, Chicago, IL
Christopher J. DeWald, MD, Chicago, IL

Laminar hooks at upper instrumented vertebra were associated with reduced rates of proximal junctional kyphosis compared with pedicle screws in deformity-correcting spine fusion.

2:24 PM  PAPER 626
Recovery and Clinical Impact of Neurological Complications in Adult Spinal Deformity Surgery
Mitsuru Yagi, MD, PhD, Tokyo, Japan
Nobuyuki Fujita, Tokyo, Japan
Eiji Okada, MD, Tokyo, Japan
Satoshi Suzuki, MD, PhD, Ichikawa, Japan
Narihito Nagoshi, Toronto, ON, Canada
Oshikoh Tsuji, MD, PhD, Tokyo, Japan
Takashi Asazuma, MD, PhD, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan
Kota Watanabe, MD, PhD, Tokyo, Japan
Keio Spine Research Group

The overall NC rate in ASD surgery was 10% of 212 multi-centered cases and the incidence of a major NC was 6%. NCS resulted in inferior clinical outcomes in ASDs.

2:30 PM  PAPER 627
Three-Column Osteotomies: A Single Surgeon’s Learning Curve
Brandon Carlson, MD, MPH, New York, NY
Renaud Lafage, New York, NY
Sravisht Iyer, MD, Chicago, IL
Jonathan C. Elysee, New York, NY
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY
Han Jo Kim, MD, New York City, NY

Three-column osteotomies affect multiple perioperative and postoperative parameters, and more experience in the procedure has shown to enhance surgical outcome.

2:42 PM  PAPER 628
Reciprocal Changes of Mild and Severe Cases of Proximal Junctional Kyphosis After Lumbo-Pelvic Spinal Fusions
Peter G. Passias, MD, Westbury, NY
Nicholas Frangella, BS, New York, NY
Renaud Lafage, New York, NY
Virginie Lafage, PhD, New York, NY
Justin S. Smith, MD, Charlottesville, VA
Breton G. Line, BS, Denver, CO
D. Kojo Hamilton, Pittsburgh, PA
Bassel Diebo, MD, Brooklyn, NY
Khaled M. Kebaish, MD, Baltimore, MD
Frank A. Segreto, BS, Oakdale, NY
Samantha Horn, BA, New York, NY
Cole Bortz, BA, New York, NY
Alexandra Soroceanu, MD, Halifax, NS, Canada
Jeffrey Gum, MD, Louisville, KY
Munish C. Gupta, MD, St. Louis, MO
Eric O. Klineberg, MD, Sacramento, CA
Douglas C. Burton, MD, Kansas City, KS
Robert A. Hart, MD, Seattle, WA
Christopher Ames, MD, San Francisco, CA
Robert S. Bess, MD, Castle Rock, CO
Christopher I. Shaffrey, MD, Charlottesville, VA
Frank J. Schwab, MD, New York, NY
International Spine Study Group

In patients with severe proximal junctional kyphosis, proximal adjustment of the spine localizes on the cervico-thoracic junction over time.

2:48 PM  PAPER 629
Liposomal Bupivicaine Reduces Narcotic Consumption in Adult Deformity Surgery
Andrew S. Chung, DO, Phoenix, AZ
Jan Revella, RN, Mesa, AZ
Yu-Hui Chang, PhD, MPH, Scottsdale, AZ
Michael S. Chang, MD, Phoenix, AZ

Liposomal bupivacaine substantially reduces opioid requirements after adult spinal deformity surgery with no noticeable complications.

2:54 PM  PAPER 630
Rod Configuration in Revision Adult Spinal Deformity Surgery: Classification System to Compare Rate of Instrumentation Failure
Mostafa H. El Dafrawy, MD, Baltimore, MD
Micheal Raad, MD, Baltimore, MD
Jay Reidler, MD, MPH, Baltimore, MD
Varun Puvanesarajah, MD, Baltimore, MD
Morsi Khashan, Baltimore, MD
Khaled M. Kebaish, MD, Baltimore, MD

We present a four-digit classification system that allows description of various rod constructs in spine deformity to compare rate of rod fractures and degree of correction between different constructs.
3:06 PM
PAPER 631
Predictors of Nonneurologic Complications and Increased Length of Stay after Cervical Spine Osteotomy

**John M. Depasse, MD, Providence, RI**  
Wesley M. Durand, BS, Providence, RI  
Alan H. Daniels, MD, Providence, RI

This study utilizes the NSQIP to identify predictors of complications and increased length of stay after cervical spine osteotomy, which is an increasingly utilized technique.

3:12 PM
PAPER 632
A Comparative Analysis of Young vs. Older Adult Spinal Deformity Patients Fused to the Pelvis: Who Benefits More?

**Brian J. Neuman, MD, Baltimore, MD**  
Micheal Raad, MD, Baltimore, MD  
Christopher Ames, MD, San Francisco, CA  
Robert S. Bess, MD, Castle Rock, CO  
Jeffrey Gum, MD, Louisville, KY  
Munish C. Gupta, MD, St. Louis, MO  
Eric O. Klineberg, MD, Sacramento, CA  
Virginie Lafage, PhD, New York, NY  
Gregory M. Mundis, MD, San Diego, CA  
Christopher I. Shaffrey, MD, Charlottesville, VA  
Peter G. Passias, MD, Westbury, NY  
Themistocles S. Protopsaltis, MD, New York, NY  
Daniel Sciubba, MD, Baltimore, MD  
Justin S. Smith, MD, Charlottesville, VA  
Khaled M. Kebaish, MD, Baltimore, MD  
International Spine Study Group

Compared to older patients, younger patients fused to the pelvis seem to show less long-term improvement in HRQOL and 13% do not return to work.

3:18 PM
PAPER 633
Is Frailty Responsive to Surgical Correction of Adult Spinal Deformity? An Investigation of Sagittal Realignment and Component Drivers of Postoperative Frailty Status

**Peter G. Passias, MD, Westbury, NY**  
Frank A. Segreto, BS, Oakdale, NY  
Renaud Lafage, New York, NY  
Justin S. Smith, MD, Charlottesville, VA  
Breton G. Line, BS, Denver, CO  
Juan S. Uribe, MD, Paradise Valley, AZ  
Bassel Diebo, MD, Brooklyn, NY  
D. Kojo Hamilton, Pittsburgh, PA  
Cole Bortz, BA, New York, NY  
Samantha Horn, BA, New York, NY  
Robert K. Eastlack, MD, San Diego, CA  
Jeffrey Gum, MD, Louisville, KY  
Munish C. Gupta, MD, St. Louis, MO  
Eric O. Klineberg, MD, Sacramento, CA  
Douglas C. Burton, MD, Kansas City, KS  
Robert A. Hart, MD, Seattle, WA  
Robert S. Bess, MD, Castle Rock, CO  
Christopher I. Shaffrey, MD, Charlottesville, VA  
Christopher Ames, MD, San Francisco, CA  
Virginie Lafage, PhD, New York, NY  
International Spine Study Group

Improvements to social life, employment, carrying groceries, climbing a flight of stairs, balance, and lack of leg weakness highly correlated with improved postoperative frailty in ASD patients.

Discussion

4:00 PM - 5:00 PM
Room 3401

◆ TWISI3 Surgeon Burnout – Consider as a Stress Fracture versus Insufficiency Fracture

**Moderator: Alexandra E. Page, MD, La Jolla, CA**

I. **Burnout: What Is It?**  
   S. Elizabeth Ames, MD, Burlington, VT

II. **Why Surgeons Burn Out and How To Restore Positive Emotion**  
    John D. Kelly, MD, Newtown Square, PA

III. **Organization Change to Promote Well-being**  
    Peggy L. Naas, MD, MBA, Chanhassen, MN

IV. **Burnout in Orthopaedic leadership and Training Programs**  
    Khaled J. Saleh, FRSC, MD, Northville, MI

V. **Combat Burnout with Personal Resilience and Positive Attitude**  
    Jeffrey M. Smith, MD, San Diego, CA

Combining personal techniques with organizational and practice changes can prevent or ameliorate the loss of joy and normal function associated with surgeon burnout.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
SYMPOSIA

4:00 PM - 6:00 PM
Palazzo Ballroom L

◆ Q The Spine and Its Influence on Total Hip Arthroplasty and Instability

Moderator: Craig J. Della Valle, MD, Chicago, IL

Spine fusions, either before or after total hip arthroplasty, influence effective acetabular component position and thus instability rates.

I. Dual-Mobility Constructs: What Is Their Role/Dual-Mobility Constructs: What Is Their Role?
Matthew P. Abdel, MD, Rochester, MN

II. Defining the Problem
Daniel J. Berry, MD, Rochester, MN

III. Constrained Liners: When Do I Resort to Them?
John J. Callaghan, MD, Iowa City, IA

IV. Total Hip Arthroplasty and Spine Fusion: Which Should Come First?
Lawrence D. Dorr, MD, Pasadena, CA

V. How Do We Hit That Target?
Fares S. Haddad, FRCS, London, United Kingdom

VI. Large Femoral Heads: How Do They Work and Do They Help?
William A. Jiranek, MD, Durham, NC

VII. What is the Target?
Douglas E. Padgett, MD, New York, NY

VIII. The Spine Surgeon’s Perspective
Kern Singh, MD, Chicago, IL

IX. Terminology for the TJA Surgeon
Bryan D. Springer, MD, Charlotte, NC

X. Understanding Spino-Pelvic Radiographs
Jonathan M. Vigdorchik, MD, New York, NY

Palazzo Ballroom E

◆ R The Multiligament Injured/Dislocated Knee: A Case-Based Symposium

AOSSM

Moderator: Bruce A. Levy, MD, Rochester, MN

This symposium will focus on current treatment strategies for the multiligament injured/dislocated knee using a case based approach and highlighting the best available evidence.

I. Rehabilitation/Return to Sport after Multi-ligament Reconstruction
Joel L. Boyd, MD, Minneapolis, MN

II. Medial Sided injuries in the Multiple Ligament Injured Knee
Lars Engebretsen, MD, Oslo, Norway

III. Timing of Repair/Reconstruction after Knee Dislocation
Gregory C. Fanelli, MD, Danville, PA

IV. Lateral Sided Injuries in the Multiple Ligament Injured Knee
Robert F. LaPrade, MD, PhD, Chanhassen, MN

V. The Irreducible Knee Dislocation
Peter B. MacDonald, MD, Winnipeg, MB, Canada

VI. ACL Reconstruction in the Multiple Ligament Injured Knee
Robert G. Marx, MD, New York, NY

VII. PCL Reconstruction in the Multiple Ligament Injured Knee
Mark D. Miller, MD, Charlottesville, VA

VIII. Vascular assessment of the Multiple Ligament Injured Knee
James P. Stannard, MD, Columbia, MO

IX. Revision Multi-ligament Knee Reconstruction Surgery
Michael J. Stuart, MD, Rochester, MN

X. Neurologic assessment of the Multiple Ligament Injured Knee
Daniel Whelan, MD, Toronto, ON, Canada

Palazzo Ballroom J

◆ S Are They Calling You with a Pediatric Orthopaedic Emergency?

POSNA

Moderator: Pooya Hosseinzadeh, MD, St. Louis, MO

Learn how to evaluate and treat emergencies in pediatric orthopedics you get called about.

I. The Pulseless Supracondylar Fracture: State of the Art Management 2019
Donald S. Bae, MD, Boston, MA

I. The Pediatric Open Fracture: Tonight or Tomorrow?
Jack M. Flynn, MD, Philadelphia, PA

I. “They Reduced the Elbow Dislocation But There is Something in the Joint”
Steven L. Frick, MD, Stanford, CA

IV. Multi-trauma and Damage Control (Pediatric) Orthopaedics
Ken J. Noonan, MD, Madison, WI

V. Femoral Neck Fractures; Unstable SCFE—2019: Now What?
Wudbhav N. Sankar, MD, Wynnewood, PA

VI. “Sounds Like a Septic Hip”
Jonathan G. Schoenecker, MD, Nashville, TN

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Thursday

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4:00 PM - 6:00 PM

◆ 361 Intraoperative and Postoperative Complications in Total Hip Arthroplasty: How Do I Make It Right?
Moderator: Jay R. Lieberman, MD, Los Angeles, CA
Michael P. Bolognesi, MD, Durham, NC
Steven J. MacDonald, MD, London, ON, Canada
William J. Maloney, MD, Redwood City, CA

Provide surgeons with strategies to prevent and manage common complications that occur intra-operatively and post-operatively including periprosthetic fracture, wound drainage, infection, dislocation, and trunionosis.

◆ 362 The Basic Knee Revision – Simple Knee Revision for the Generalist
Moderator: Ran Schwarzkopf, MD, New York, NY
David Backstein, MD, Toronto, ON, Canada
James A. Browne, MD, Charlotteville, VA
Douglas Naudie, MD, FRCSC, London, ON, Canada

This course explores the challenges of revision total knee arthroplasty (TKA) for the community surgeon, modes of TKA failure, the stiff knee, isolated polyethylene liner exchange, and executing the simple TKA revision. Current modern preoperative planning and intraoperative techniques are discussed. At the end of the course, participants feel comfortable applying treatment algorithms for simple revision TKA cases.

◆ 363 Getting It Right the Second Time: Pearls and Principles for Revision Surgery in the Foot and Ankle
Moderator: Michael P. Clare, MD, Bradenton, FL
Mark J. Berkowitz, MD, Cleveland, OH
Anish R. Kadakia, MD, Glenview, IL
Jeremy J. McCormick, MD, Chesterfield, MO

This course presents strategies and techniques for the evaluation and treatment of the failed foot and ankle surgery including the failed bunion, nonunion/malunion of hindfoot and ankle fusion, the unsuccessful flatfoot surgery, and the failed ankle fracture.

◆ 364 Women in Orthopaedics: What You Really Want to Know (But Are Too Afraid to Ask)
Moderator: Meghan N. Imrie, MD, Portola Vally, CA
Kristen E. Fleager, MD, Southlake, TX
Amy L. Ladd, MD, Redwood City, CA
Jennifer M. Weiss, MD, Los Angeles, CA

This course addresses practical concerns facing women in orthopaedics such as pregnancy, maternity leave, work-life balance, and pursuing leadership positions.

◆ 365 Managing Wrist Arthritis
Moderator: Peter Tang, MD, Sewickley, PA
Joseph E. Imbriglia, MD, Wexford, PA
Steven Regal, MD, Pittsburgh, PA
Robert J. Strauch, MD, New Rochelle, NY

This course covers the current treatment options for wrist arthritis as well as the evidence to support them. The faculty shares their treatment algorithms.

◆ 366 Sports Specialization and the Skeletally Immature Athlete: Current Concepts
Moderator: Nirav K. Pandya, MD, Oakland, CA
Jennifer Beck, MD, Los Angeles, CA
Brian T. Feeley, MD, San Francisco, CA
Andrew T. Pennock, MD, Rancho Santa Fe, CA

Single sport specialization has had dramatic impact on the health of skeletally immature athletes and understanding its effect is critical for the clinician.

◆ 367 Patient-Reported Outcomes in Orthopaedics – Why and How We Collect Them
Moderator: Eric C. Makhni, MD, MBA, West Bloomfield, MI
David C. Ayers, MD, Worcester, MA
Judith F. Baumhauer, MD, MPH, Rochester, NY
Kevin J. Bozic, MD, MBA, Austin, TX

Patient-reported outcomes (PRO) are becoming increasingly important in orthopaedics. Learn why they are important to collect and how to collect them in your practice.

◆ 368 Traumatic Elbow Instability: How to Fix It, and When to Phone a Friend
Moderator: Michael J. O’Brien, MD, New Orleans, LA
John E. Conway, MD, Fort Worth, TX
Matthew L. Ramsey, MD, Philadelphia, PA
Felix H. Savoie, MD, New Orleans, LA

Learn the keys to management of traumatic elbow instability, including soft tissue injuries, fracture-dislocations, sports-related injuries, and the treatment of stiffness and complications.

◆ 369 The Basic Shoulder Arthroplasty: Simple Shoulder Replacement for the Generalist
Moderator: Gordon I. Groh, MD, Asheville, NC
Mark A. Franklin, MD, Temple Terrace, FL
Jonathan C. Levy, MD, Ft. Lauderdale, FL
Gerald R. Williams, MD, Philadelphia, PA

This course explores the challenges of shoulder arthroplasty for the community surgeon. Current modern preoperative planning and intraoperative techniques, are discussed.

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**THURSDAY EDUCATIONAL PROGRAMS**

370  
**Patellofemoral 101 – Back to the Basics: How to do a MPFL, Tibial Tubercle Osteotomy and Osteochondral Fracture Repair for Recurrent Patellar Instability**  
Moderator: Sabrina Strickland, MD, New York, NY  
Andreas H. Gomoll, MD, New York, NY  
Bert Mandelbaum, MD, Santa Monica, CA  
Seth Sherman, MD, Columbia, MO  

Goal: improve orthopaedic surgeon’s management of patellar instability. Focus on decision making and surgical technique of medial patellofemoral ligament reconstruction, osteotomy, and acute cartilage injury.

371  
**New Developments in Hip Fracture Treatment to Reduce Morbidity and Mortality**  
Moderator: Richard F. Kyle, MD, Minneapolis, MN  
Lisa K. Cannada, MD, Jacksonville, FL  
Steven A. Olson, MD, Durham, NC  
Emil H. Schemitsch, MD, London, ON, Canada  

There have been major changes in the treatment of various hip fracture patterns in the proximal femur. This course teaches the correct device to use in each hip fracture pattern and the technique used.

**387 “Simple” Fractures Gone Wrong: What Do I Do Now?**  
Moderator: Frank A. Liporace, MD, Englewood Cliffs, NJ  
Cory A. Collinge, MD, Nashville, TN  
Derek J. Donegan, MD, Philadelphia, PA  
Mark Gage, MD, Durham, NC  
George J. Haidukewych, MD, Orlando, FL  
Daniel S. Horwitz, MD, Danville, PA  
Joshua Langford, MD, Orlando, FL  
Michael A. Maceroli, MD, Atlanta, GA  
J. Tracy Watson, MD, Phoenix, AZ  
Richard S. Yoon, MD, Jersey City, NJ  

Avoiding and getting out of trouble in the “not so simple” community fracture. Learn tips and tricks from the experts in this comprehensive case presentation.

**388 Common Conditions in Hand Surgery and How to Deal with their Complications**  
Moderator: Sanjeev Kakar, MD, Rochester, MN  
Julie E. Adams, MD, Rochester, MN  
Neal C. Chen, MD, Boston, MA  
Jonathan E. Isaacs, MD, Richmond, VA  
Peter J. Jebson, MD, Grand Rapids, MI  
Robin N. Kamal, MD, Redwood City, CA  
Daniel Osei, MD, MSc, New York, NY  
Mark S. Rekant, MD, Cherry Hill, NJ  
Marc J. Richard, MD, Durham, NC  
Tamara D. Rozental, MD, Boston, MA  
Jeffrey Yao, MD, Redwood City, CA  

Course presenters detail some of the most common hand and wrist conditions you will see and provide tips and tricks for appropriate management.

**PAPER PRESENTATIONS 634-648**

4:00 PM - 6:00 PM

Room 2102

Adult Reconstruction Knee VII (634-648): Surgical Technique and Implants in TKA  
**PAPER 634**  
Micro-comparative study of the effectiveness of ‘Always Resurfacing’ the Patella during Primary Total Knee Arthroplasty  
Alistair J. Maney, BS, Auckland, New Zealand  
Chuan K. Koh, MBCHB, Invercargill, New Zealand  
Chris Frampton, Christchurch, New Zealand  
Simon Young, MD, FRACS, Auckland, New Zealand  

‘Always’ resurfacing the patella was associated with improved patient reported outcomes, but there was no difference in overall revision rates between strategies.

**PAPER 635**  
Comparison of In Vivo Wear Particles between Vitamin E-Infused Highly Cross-Linked Polyethylene and Conventional Polyethylene in Total Knee Arthroplasty  
Yukihide Minoda, MD, Osaka, Japan  
Kumi O. Ogi, PhD, Osaka, Japan  
Suguru Nakamura, MD, Osaka, Japan  
Hideki Ueyama, MD, Osaka, Japan  
Susumu Takemura, MD, Osaka, Japan  
Hiroaki Nakamura, MD, Osaka, Japan  

This in vivo study using the same prosthesis showed that vitamin E-infused highly cross-linked polyethylene generated more, smaller, and rounder wear particles than conventional polyethylene in TKA.

**Discussion**
4:24 PM  PAPER 637
What is the Outcome of Bi-Cruciate Versus Cruciate Retaining Total Knee Arthroplasty at Two-Year Follow Up Assessed in a Randomized Controlled Trial?
Anders Troelsen, MD, PhD, Copenhagen, Denmark
Lina H. Ingelsrud, MSc, Hvidovre, Denmark
Morten G. Thomsen, MD, Hvidovre, Denmark
Omar Muharemovic, MSc, Hvidovre, Denmark
Kristian S. Otte, MD, Hvidovre, Denmark
Henrik Husted, MD, København, Denmark
A randomized controlled trial of 50 patients receiving either a Bi-cruciate retaining (Bi-CR) or CR total knee arthroplasty showed no differences in fixation or clinical outcomes at two-years follow up.

4:30 PM  PAPER 638
A Prospective, Randomized Trial of Cemented versus Cementless Total Knee Arthroplasty of the Same, Modern Design
Denis Nam, MD, MSc, Chicago, IL
Charles M. Lawrie, MD, St. Louis, MO
Rondek Salih, MPH, St. Louis, MO
Cindy R. Nahhas, BS, Skokie, IL
Robert L. Barrack, MD, St. Louis, MO
Ryan M. Nunley, MD, St. Louis, MO
A recently introduced cementless TKA design demonstrates excellent results without failure at a minimum of two-year follow up, but its potential long-term benefits must still be determined.

4:36 PM  PAPER 639
What is the Cumulative Effect of Low Revision Risk Design Options in Total Knee Replacement?
Christopher Vertullo, MBBS, FRACS, Benowa, Australia
Peter L. Lewis, MB, Adelaide, Australia
Yi Peng, Adelaide, Australia
Stephen Graves, MD, Adelaide, Australia
Patients who received low revision risk TKA options in regard to fixation, posterior stability, bearing mobility, bearing surface, and patella resurfacing had a 61% lower chance of revision.

4:48 PM  PAPER 640
What Happened? Extreme Delamination and Oxidation in Modern Day Compression Molded Polyethylene
Brian T. Nickel, MD, New York, NY
Lydia Weitzler, MS, New York, NY
Douglas E. Padgett, MD, New York, NY
Timothy M. Wright, PhD, New York, NY
A single device company’s compression molded TKA poly when implanted after 2007 resulted in a stark increase in surface delamination and oxidation.

4:54 PM  PAPER 641
Preoperative Predictors of Not Attaining Patient Acceptable Symptom State in Pain and Function After Total Knee Arthroplasty
James W. Connelly, BA, Boston, MA
Vincent Galea, BA, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
Sean J. Matuszak, BA, Boston, MA
Christian Skovgaard Nielsen, MD, Copenhagen, Denmark
Charles R. Bragdon, PhD, Boston, MA
James I. Huddleston, MD, Redwood City, CA
Henrik Malchau, MD, Cambridge, MA
Anders Troelsen, MD, PhD, Copenhagen, Denmark
Patients with less-than-severe osteoarthritis, lower general health, and lower KOOS Sports/Recreation scores are less likely to achieve patient acceptable symptom state after total knee arthroplasty.

5:00 PM  PAPER 642
Effectiveness of Anti-Oxidant Polyethylene: What Early Retrievals Can Tell Us
Barbara H. Currier, MChE, Hanover, NH
John H. Currier, MS, Hanover, NH
Michael B. Mayor, MD, Hanover, NH
Douglas Van Citters, PhD, Hanover, NH
Antioxidant polyethylene retrievals showed no oxidation, maintaining original tensile properties and cross-linking, in contrast to HXL retrievals that showed oxidative changes over seven years in vivo.

5:12 PM  PAPER 643
Does Using a Smart Tibial Tray to Assess Soft Tissue Balance Help Improve Functional Outcomes After Total Knee Arthroplasty? A Retrospective Case Control Study
Emma Jennings, BS, New York, NY
Akshay Lakra, MBBS, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Jeffrey A. Geller, MD, New York, NY
The sensor guided TKR did not show improved PROM but did show increased ROM at one-year follow up in this retrospective cohort study.

5:18 PM  PAPER 644
Three to Five Year Survivorship of a Contemporary Bicruciate-Retaining Total Knee Arthroplasty: Higher than Anticipated Rate of Failure
Phillip A. Sandifer, MD, Salt Lake City, UT
Mike Anderson, MSc, Salt Lake City, UT
Christopher L. Peters, MD, Salt Lake City, UT
Jeremy Gilliland, MD, Salt Lake City, UT
Christopher E. Pelt, MD, Salt Lake City, UT
Our data demonstrate a revision rate of 13.5% with an overall survivorship of 88% at three years. Implant loosening, ACL related issues, and pain were the most common indications for revision.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
5:24 PM  PAPER 645  
Synthetic Graft Compared to Allograft Reconstruction for Extensor Mechanism Disruption in Total Knee Arthroplasty: A Multicenter Cohort Study  
Thomas Wood, MD, Hamilton, ON, Canada  
Jennifer Leighton, FRCSI, MD, Toronto, ON, Canada  
David Backstein, MD, Toronto, ON, Canada  
Jacquelyn Marsh, MSc, PhD, London, ON, Canada  
James Howard, MD, London, ON, Canada  
Richard W. McCalden, MD, London, ON, Canada  
Steven J. MacDonald, MD, London, ON, Canada  
Brent Lanting, MD, London, ON, Canada  

This study shows favorable outcomes in terms of complication rate, reoperation, graft failure, infection, and cost for synthetic reconstruction when compared to allograft reconstruction.

Discussion

5:36 PM  PAPER 646  
Comparison of a Vitamin E-Infused Highly Cross-Linked Polyethylene Insert and a Conventional Polyethylene Insert for Primary Total Knee Arthroplasty at Two Years Postoperatively  
Susumu Takemura, MD, Osaka, Japan  
Yukihide Minoda, MD, Osaka, Japan  
Hideki Ueyama, MD, Osaka, Japan  
Suguru Nakamura, MD, Osaka, Japan  
Ryo Sugama, MD, Osaka, Japan  
Yoichi Ohta, Osaka, Japan  
Hiroaki Nakamura, MD, Osaka, Japan  

Differences between vitamin E-infused HXLPE and conventional PE with the same design were not significant two years after the operation, and there were no early failures due to use of the new material.

5:42 PM  PAPER 647  
Patient Specific Instrumentation does not Improve the Predicted Longevity of Total Knee Arthroplasty According to Radiostereometric Analysis  
Douglas Naudie, MD, FRCSI, London, ON, Canada  
James Howard, MD, London, ON, Canada  
Edward Vasarhelyi, MD, MSc, London, ON, Canada  
Xunhua Yuan, PhD, London, ON, Canada  
Richard W. McCalden, MD, London, ON, Canada  
Matthew G. Teeter, PhD, London, ON, Canada  

A randomized trial comparing patient specific to conventional instrumentation for total knee arthroplasty found no difference in implant migration predicting similar implant longevity between groups.

Discussion

5:48 PM  PAPER 648  
The Use of Vacuum Mixing with High Viscosity Bone Cement Increases the Incidence of Aseptic Loosening in Total Knee Arthroplasty  
Bradley S. Hillyard, BA, Holladay, UT  
Nathan Momberger, MD, Salt Lake City, UT  
Allison M. Butler, BS, MS, Murray, UT  
Jacob L. Henrichsen, BS, Royal Oak, MI  

A review of total knee arthroplasties was performed to evaluate the efficacy of vacuum mixing. Results suggest current vacuum techniques be reevaluated when utilizing high viscosity bone cement.

Discussion
4:12 PM  
PAPER 651
Iliac Dysmorphism: Defining Radiographic Characteristics and Association with Pelvic Osseous Corridor Size
Miqi Wang, MD, Burlington, VT
Weston D. Pack, PhD, Williston, VT
Robert C. Jacobs, MD, Burlington, VT
Craig S. Bartlett, MD, South Burlington, VT
Patrick C. Schottel, MD, Shelburne, VT

Characteristics of the ilium on 2D imaging can help predict iliac osseous fixation pathway dimensions and guide preoperative decision making.

Discussion

4:24 PM  
PAPER 652
Are Current Radiographic Methods of Assessing Acetabular Displacement Reliable?
Daniel Connelly, BS, Baltimore, MD
Anthony R. Carlini, MS, Baltimore, MD
Jason W. Nascone, MD, Baltimore, MD
Marcus F. Sciadini, MD, Baltimore, MD
Christopher Lee, MD, Baltimore, MD
Christopher T. LeBrun, MD, Ellicott City, MD
Matthew Hogue, MD, Iowa City, IA
John Morellato, MBBS, Columbia, MD
Christopher Domes, MD, Baltimore
Aaron J. Johnson, MD, Glen Burnie, MD
Renan C. Castillo, MD, Lincoln, NE
Nathan N. O’Hara, Baltimore, MD
Robert V. O’Toole, MD, Lutherville, MD
Gerard Slobogean, MD, MPH, Baltimore, MD
University of Maryland Orthopaedic Trauma

When using plain radiographs to assess displacement and reduction quality of acetabular fractures, current criteria displayed only poor to fair interobserver reliability.

4:30 PM  
PAPER 653
Accuracy of Percutaneous Sacro-Iliac Screw Fixation for Pelvic Ring Injuries using Standardized Image Intensifier Protocol with Lateral Shots as the Corner Stone for Screw Placement: Prospective Cohort Study with Post-Op Computed Tomography as the Reference Standard
Job N. Doornberg, MS, Amsterdam, Netherlands
Jan Erik Madsen, MD, PhD, Oslo, Norway
Mark Rickman, MD, Adelaide, Australia

Standard intraoperative ii-techniques according to a stepwise protocol – using lateral ii shots as the corner stone - is safe and effective for percutaneous SI screw fixation in pelvic ring injuries.

Discussion

4:36 PM  
PAPER 654
Percutaneous Superior Pubic Ramus Screws are Associated with Low Failure Rates
Boshen Liu, MD, Lexington, KY
Alesha Scott, DO, Lincoln, NE
Colin S. Cooper, MD, Lexington, KY
Brandon Scott, MD, Lexington, KY
Paul E. Matuszewski, MD, Lexington, KY
Raymond D. Wright, MD, Lexington, KY

Percutaneous intramedullary fixation of superior pubic ramus fractures are associated with low failure rate in the present cohort. The most common cause for failure was errant screw insertion.

Discussion

4:48 PM  
PAPER 655
Early Experience with Percutaneous Screw Fixation of Pubic Symphysis Diastasis
Drew P. Kelly, MD, Dallas, TX
Ryan F. Michels, MD, West Reading, PA
Ashoke K. Sathy, MD, Southlake, TX
Adam J. Starr, MD, Dallas, TX

Our early results show percutaneous screw fixation of pubic symphysis diastasis to be comparable to other fixation methods in terms of safety and effectiveness.

4:54 PM  
PAPER 656
Transsacral Screw Fixation of Vertical Shear Pelvic Ring Injuries
Drew P. Kelly, MD, Dallas, TX
Breann K. Tisano, MD, Dallas, TX
Adam J. Starr, MD, Dallas, TX
Ashoke K. Sathy, MD, Southlake, TX

No fixation failures occurred among the SI dislocations; fixation failure occurred in four (50%) of the eight vertical sacral fractures, but no patient required revision to achieve union.

5:00 PM  
PAPER 657
Percutaneous Transiliac-Transsacral Screw Fixation of Sacral Fragility Fractures Improves Pain, Ambulation, and Rate of Disposition to Home
Joseph B. Walker, MD, Phoenix, AZ
Sean M. Mitchell, MD, Phoenix, AZ
Sean Karr, MD, Phoenix, AZ
Jason A. Lowe, MD, Tucson, AZ
Clifford B. Jones, MD, FACS, Phoenix, AZ

Percutaneous transiliac-transsacral screw fixation of sacral fragility fractures leads to improved ambulation and an increased rate of disposition to home.

Discussion
5:12 PM  **PAPER 658**
Nonoperative Treatment of LC-1 Pelvic Fractures: Do Patients Achieve Functional Outcomes Comparable to Healthy Controls?
Aidan Hadad, New York, NY
Matthew R. Cohn, MD, Chicago, IL
Rehan Saiyed, BS, New York, NY
Eric W. Marty, BA, New York City, NY
Omer Or, MD, New York, NY
Joseph M. Lane, MD, New York, NY

The purpose of this study is to evaluate functional outcomes of nonoperative treatment in a consecutive cohort of patients with isolated LC-1 pelvic ring fractures compared to healthy controls.

5:18 PM  **PAPER 659**
Long-Term Outcomes of Unstable Pelvic Fractures Requiring Iliosacral Screw Fixation
Kyle Hildebrandt, BS, Flint, MI
Jessica Mandel, BA, Miami, FL
Sanjit R. Konda, MD, New York, NY
Kenneth A. Egol, MD, New York, NY

Patients with unstable posterior pelvic fractures definitively fixed using IS screws experience significant functional limitations that do not appear to resolve over time.

5:24 PM  **PAPER 660**
Time is of the Essence: PROMIS Surveys Demonstrate Strong Correlation with Traditional Patient Reported Outcomes and Appear More Time Efficient in Patients with Operatively Treated Acetabulum Fractures
Adam Schumaier, MD, Cincinnati, OH
Georgina Glogovac, MD, Maryland Heights, MO
Frank Avilucea, MD, Orlando, FL
Ryan Finnan, MD, Loveland, OH
Michael T. Archdeacon, MD, Cincinnati, OH

This study found a strong correlation between the new PROMIS patient reported outcomes and the traditional SMFA and SF36. On average, the PROMIS surveys were completed in under one minute.

5:36 PM  **PAPER 661**
Survivorship of the Hip after Acetabulum Fracture
Gordon Preston, DO, Cuyahoga Falls, OH
Heather A. Vallier, MD, Cleveland, OH

A retrospective review to determine survivorship of the hip joint following acetabular fracture at a level I trauma center.

5:42 PM  **PAPER 662**
Impact of Closed Suction Drainage after Surgical Fixation of Acetabular Fractures
Adam Boissonneault, MBCHB, Atlanta, GA
Mara L. Schenker, MD, Atlanta, GA
Christopher A. Staley, BA, Atlanta, GA
Amalie Erwood, BS, Atlanta, GA
Madeline Roorbach, BA, Atlanta, GA
Zachary Grabel, MD, Atlanta, GA
Thomas J. Moore, MD, Atlanta, GA
William M. Reisman, MD, Atlanta, GA
Michael A. Maceroli, MD, Atlanta, GA

The use of closed suction drains for treatment of acetabular fractures is associated with increased rates of blood transfusion and increased length of hospital stay.

5:48 PM  **PAPER 663**
Incidence and Risk Factors of Deep Vein Thrombosis in Patients with Pelvic and Acetabular Fractures
Pengfei Wang, MD, Xi’An, People’s Republic of China
Utku Kandemir, MD, San Francisco, CA
Jiahao Li, Xi’An, People’s Republic of China
Kun Zhang, MD, Xi’An, People’s Republic of China

Despite prophylaxis, the risk of DVT is still very high, and located mostly proximally. The risk of DVT is higher in patients >60 yo, with associated injuries and the injury to surgery time >2weeks.

Discussion

**PAPER PRESENTATIONS 664-678**
4:00 PM - 6:00 PM
Room 4303

Hand and Wrist III (664-678): Fractures II
Moderators: Emil Dionysian, MD, Anaheim, CA and Angela A. Wang, MD, Salt Lake City, UT

4:00 PM  **PAPER 664**
Rates of Nonunion, Arthritis, and Fusion after Scaphoid Fractures Treated Nonoperatively and Operatively
Shawn Feinstein, MD, Durham, NC
Hannah Dineen, MD, Chapel Hill, NC
Ainsley K. Bloomer, BA, BS, Charlotte, NC
Jamie Jarmul, PhD, Durham, NC
Reid W. Draeger, MD, Chapel Hill, NC

Patients with scaphoid fractures showed a significantly higher rate of nonunion (approximately one in every four fractures) and subsequent fusion after surgery than those who were treated nonoperatively.
Thursday Educational Programs

4:06 PM  PAPER 665
Evaluating Factors Associated with Scaphoid Nonunion Following Open Reduction and Internal Fixation
Pooja Prabhakar, Dallas, TX
Lauren E. Wessel, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Michelle G. Carlson, MD, New York, NY
Duretti Fufa, MD, New York, NY

This case control study demonstrates that time to surgery and fracture fragment size are significant factors that may affect scaphoid healing after operative management.

4:12 PM  PAPER 666
Long-Term Outcomes for Arthroscopic Electrothermal Treatment for Scapholunate Interosseous Ligament Injuries
Matthew Bunn, MD, Redwood City, CA
Eric J. Sarkissian, MD, Menlo Park, CA
Jeffrey Yao, MD, Redwood City, CA

Our findings at long-term (mean 7 year) follow up confirm that arthroscopic electrothermal treatment of scapholunate interosseous ligament injuries is a safe, effective, and durable treatment option.

4:24 PM  PAPER 667
Surgical Outcomes of Chronic Isolated Scapholunate Interosseous Ligament Injuries: A Systematic Review of 805 Wrists
Spencer Montgomery, Calgary, AB, Canada
Natalie Rollick, MD, Calgary, AB, Canada
Jeremy Kubik, MD, Calgary, AB, Canada
Alexander Meldrum, MD, Calgary, AB, Canada
Neil White, MD, FRCSC, Calgary, AB, Canada

Optimal treatment of SLIL injuries is unclear. Surgical management provides moderate gains in grip strength and patient rated outcomes. A better understanding of the natural history is required.

4:30 PM  PAPER 668
The Natural Course of Triangular Fibrocartilage Complex Tear without Distal Radioulnar Joint Instability
Bong Cheol Kwon, MD, PhD, Anyang, Republic of Korea
Hwang Jae-Yeon, Anyang City, Republic of Korea

The TFCC tear has moderate potential of complete healing in one year.

4:36 PM  PAPER 669
The Relationship between Thrombin and Osteopontin in Dupuytren's Disease
Kazuya Odake, Tsu, Japan
Masaya Tsujii, MD, PhD, Tsu, Japan
Akihiro Sudo, MD, Tsu City, Japan

Osteopontin (OPN) and thrombin-cleaved OPN were expressed on myofibroblast in Dupuytren’s nodules. In vitro study showed surgical invasion and thrombin could induce differentiation into myofibroblast.

4:48 PM  PAPER 670
Is Buddy Taping as Effective as Plaster Immobilization in Adults with an Uncomplicated Neck of Fifth Metacarpal Fracture? A Randomized Controlled Trial
Richard Pellatt, Mermaid Waters, Australia
Randipsingh R. Bindra, FRACS, FRCS, Bundall, Australia
S.L. Ezekiel Tan, FRACS, Benowa, Australia
Michael Thomas, FAORTHA, FRACS, Tugun, Australia
Igor Fomin, Southport, Australia
Carli Piennar, Mermaid Waters, Australia
Ping Zhang, Southport, Australia
Merehau C. Mervin, Nathan, Australia
Gerben Keijzers, MBBS, MSc, Southport, Australia

An RCT comparing plaster cast to buddy taping for 5th metacarpal (boxer’s) fractures. Buddy tape patients returned to work earlier, with health economic benefits, and no increase in complications.

4:54 PM  PAPER 671
Treatment of Painful Neuroma by Nerve Capping Using Nerve Conduits in a Rat Model
Ema Onode, MD, Osaka City, Japan
Kiyohito Takamatsu, Osaka, Japan
Takuya Yokoi, Osaka City, Japan
Mitsuhiro Okada, MD, Osaka, Japan
Hiroaki Nakamura, MD, Osaka, Japan

Nerve stump capping by nerve conduits prevented neuroma formation, adherence, and neuropathic pain in a rat neuroma model. The appropriate length of the nerve conduit is >4 times the nerve diameter.

5:00 PM  PAPER 672
Which Patients with Upper Extremity Trauma Need Deep Vein Thrombosis or Pulmonary Embolism Prophylaxis?
Brianna Siracuse, BS, Short Hills, NJ
Joseph A. Ippolito, MD, West Orange, NJ
Joseph Galloway, MD, Newark, NJ
Michael M. Vosbikian, MD, Cranford, NJ
Irfan H. Ahmed, MD, Newark, NJ

This study examined risk factors for deep vein thrombosis or pulmonary embolism in patients suffering from isolated upper extremity trauma from the state inpatient database of NY, CA, FL, and WA.

Discussion

5:12 PM  PAPER 673
Early Mobilization After Basal Joint Arthroplasty: Clinical Results
Jacob Stirton, MD, Toledo, OH
Margaret K. Jain, MD, Silverdale, WA
Martin C. Skie, MD, Toledo, OH
Megan Mooney, MD, Toledo, OH

Early mobilization of patients following CMC arthroplasty does not compromise clinical results and may lead to an earlier return to pre-morbid function than a traditional rehabilitation protocol.

Discussion

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
5:18 PM  PAPER 674
Sterility of Ethyl Chloride Spray After Use in the Clinic
Kristin Sandrowski, MD, Philadelphia, PA
Jack Graham, BS, Philadelphia, PA
Michael Rivlin, MD, Philadelphia, PA

Although the antimicrobial activity of ethyl chloride spray on skin is debated, ethyl chloride itself remains sterile through normal use.

5:24 PM  PAPER 675
Utilization and Impact of Social Media in Hand Surgeon Practices
Garret Garofolo-Gonzalez, MD, Commack, NY
Sheriff Akinleye, MD, Brooklyn, NY
Elan Golan, MD, Brooklyn, NY
Jack Choueka, MD, Lawrence, NY

A personal website is single most important social media platform to improve Healthgrade scores in hand surgeons.

Discussion

5:36 PM  PAPER 676
Midlevel Providers in Orthopaedic Hand Surgery: The Patient's Perspective
Blaine Manning, MD, Columbia, MO
Daniel D. Bohl, MD, MPH, Chicago, IL
Timothy J. Luchetti, MD, Chicago, IL
David R. Christian, BS, Oconomowoc, WI
Michael Redondo, MA, Burr Ridge, IL
John J. Fernandez, MD, Winnetka, IL
Mark S. Cohen, MD, Glencoe, IL
Robert W. Wysocki, MD, Chicago, IL

As health care becomes consumer-centric and value-driven, a data-based approach in midlevel staff utilization will allow hand surgeons to optimize efficiency, quality, and patient satisfaction.

5:42 PM  PAPER 677
Mindset Matters: Can the QuickDASH PROM be Altered by First Completing the Tasks on the Instrument?
Lauren M. Shapiro, MD, Palo Alto, CA
Sara L. Eppler, MPH, Redwood City, CA
Robin N. Kamal, MD, Redwood City, CA

PROMs may be used for measuring quality. We found that there is a significant difference in reported disability if patients complete tasks on the PROM ahead of time.

5:48 PM  PAPER 678
Long-Term Follow Up of the Universal Total Wrist Arthroplasty in Patients with Rheumatoid Arthritis
Spencer B. Dowdle, MD, Iowa City, IA
Jessica M. Hanley, MD, Iowa City, IA
Josef N. Toffe, MD, Iowa City, IA
Brian D. Adams, MD, Houston, TX
Lindsey Caldwell, MD, Iowa City, IA
Ericka A. Lawler, MD, Iowa City, IA

The results for the universal wrist prosthesis with a mean follow up of 16.8 years has a high rate of failure. Further investigation is needed in evaluating long term survivorship in wrist prostheses.

Discussion
SYMPOSIA

8:00 AM - 10:00 AM
Palazzo Ballroom E

T Domestic Mass Casualty and Disaster: Coming to Your Area
Moderators: James R. Ficke, MD, Baltimore, MD and David C. Teague, MD, Oklahoma City, OK

This special President’s symposium will enhance awareness of domestic disaster occurrences and provide education on best preparedness practices. Discuss avenues to influence local, regional and national policy.

Presidential Introduction
David A. Halsey, MD, Edgartown, MA

I. Introduction
David D. Teuscher, MD, Paige, TX

II. Requirements and Considerations for Institutional and Individual Readiness
Christopher T. Born, MD, E Providence, RI

III. Legal and Legislative Vehicles and Barriers to National Response
James R. Ficke, MD, Baltimore, MD

IV. The Las Vegas Shooting: How a Community Responds to a Mass Casualty Event
John Fildes, MD, Las Vegas, NV

V. What Works, What Does Not Work: Domestic Scenarios Lessons Learned
COL (ret) Roman A. Hayda, MD, Providence, RI

VI. Areas of Military-Civilian Partnership for Domestic Planning and Response
Christopher T. LeBrun, MD, Ellicott City, MD

VII. Pediatric Mass Casualty Care Considerations
Mark R. Sinclair, MD, Overland Park, KS

VIII. AAOS Leadership Panel: Plans and Opportunities for Orthopaedic Leadership
All Speakers

IX. Audience Q&A

Room 4401

◆ U Joint Arthroplasty is Moving Rapidly into the Outpatient Space:
Concepts You Need to Know to Be Successful
Moderator: Adolph V. Lombardi, Jr, MD, New Albany, OH

Minimizing surgical trauma with minimally invasive techniques and multimodal pain management allow patients to mobilize quickly after arthroplasty and safely discharge same day to home.

I. My Patients Are Simply Not Interested in Outpatient Total Joint Arthroplasty: Wrong/Not Only Are My Patients Happy, but I am Also Ecstatic with Outpatient Total Joint Arthroplasty
Keith R. Berend, MD, New Albany, OH

II. Overview of My Long-Term Experience with Outpatient Arthroplasty
Richard A. Berger, MD, Chicago, IL

III. Acute Postoperative Care: What Needs to be Done Immediately Following the Procedure to Assure Smooth Transition to Home
Christian P. Christensen, MD, Lexington, KY

IV. Robotic Assisted Arthroplasty in the Outpatient Setting Can Be Cost Effective
Benjamin G. Domb, MD, Glencoe, IL

V. Venous Thrombosis Prophylaxis in the Outpatient Setting/Outpatient Total Joint Arthroplasty is a Maturing Science
Lawrence D. Dorr, MD, Pasadena, CA

VI. Blood Management Strategies for Outpatient Total Joint Arthroplasty
William G. Hamilton, MD, Alexandria, VA

VII. Postoperative Discharge Plan and Follow Up
Javad Parvizi, MD, FRCS, Philadelphia, PA

VIII. Aligning the Stakeholders in Outpatient Arthroplasty/Mining Perioperative Opioids in Outpatient Total Joint Arthroplasty
Jason M. Hurst, MD, New Albany, OH

IX. Outpatient Arthroplasty in a Socialized Healthcare System: Is it Feasible?
William Jackson, FRCS, Oxford, United Kingdom

X. Freestanding Versus Hospital Outpatient Centers: Pros & Cons for Outpatient Total Joint Arthroplasty
R. Michael Meneghini, MD, Fishers, IN

XI. Myths of Outpatient Total Joint Arthroplasty/The Patient Arrives to the Facility: Preoperative Protocols
Michael J. Morris, MD, New Albany, OH

XII. The Preoperative Plan: Tips on What Needs to Be Done Prior to the Day of Surgery
Stephen B. Murphy, MD, Boston, MA

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
ORTHOPAEDIC REVIEW COURSE

8:00 AM – 5:15 PM
Room 2102

◆ 490 Orthopaedic Review Course: Refresh, Refocus, and Prepare
Moderators: Albert J. Aboulafia, MD, Baltimore, MD and Matthew T. Wallace, MD, Baltimore, MD
Todd J. Albert, MD, New York, NY
Matthew Austin, MD, Philadelphia, PA
O. Alton Barron, MD, New York, NY
Jens R. Chapman, MD, Seattle, WA
Jacques H. Hacquebord, MD, New York, NY
Steven L. Haddad, MD, Glenview, IL
Christin Ho, MD, Dallas, TX
Joseph M. Lane, MD, New York, NY
Mark D. Miller, MD, Charlottesville, VA
David L. Skaggs, MD, Los Angeles, CA
Jonathan Schoenecker, MD, Nashville, TN
Donald A. Wiss, MD, Los Angeles, CA

The return of the renowned review course prepares you for the board exam with reviews on current knowledge of diagnosis and management of clinical problems from a nationally accepted orthopaedic practice perspective. Whether you want to refresh your knowledge, learn current and pertinent information to refocus your knowledge, or you are preparing for your board exam, this course is focused on you!

INSTRUCTIONAL COURSE LECTURES

8:00 AM - 10:00 AM

◆ 401 The Complex Primary Total Hip Arthroplasty: Contemporary Techniques to Solve Challenging Technical Problems in Primary THA
Moderator: Daniel J. Berry, MD, Rochester, MN
James A. Browne, MD, Charlottesville, VA
George J. Haidukewych, MD, Orlando, FL
Rafael J. Sierra, MD, Rochester, MN

This ICL teaches contemporary techniques to manage challenging primary THA problems including: post hip/acetabular fracture, dysplasia, protrusio, ankylosis, and more.

◆ 402 Orthopaedic Basic Science for the Practicing Physician
Moderator: Geoffrey D. Abrams, MD, Stanford, CA
Julius A. Bishop, MD, Palo Alto, CA
Viktor Erik Krebs, MD, Rocky River, OH
Neal L. Millar, MD, Glasgow, United Kingdom

The purpose of this course is to educate the practicing orthopaedic surgeon in the most recent developments in orthopaedic basic science with a special focus on fracture healing, osteoarthritis, and orthobiologics.

◆ 403 Scope of the Problem: Arthroscopy of the Foot and Ankle
Moderator: Jeremy T. Smith, MD, Boston, MA
Eric M. Bluman, MD, PhD, Chestnut Hill, MA
Christopher P. Chiodo, MD, Boston, MA
Eric Giza, MD, Sacramento, CA

This course provides fundamental and technical instruction for arthroscopic treatment of foot and ankle pathology, including ankle arthroscopy, small joint arthroscopy, and tendoscopy.

◆ 404 Mentorship in Orthopaedics: How to Succeed as a Mentor and a Mentee
Moderator: Julie B. Samora, MD, Upper Arlington, OH
Claudette M. Lajam, MD, New York, NY
Mary K. Mulcahey, MD, New Orleans, LA
Vincent D. Pellegrini, MD, Charleston, SC

Mentorship in orthopaedics and attributes of successful relationships are highlighted. Benefits of mentorship are discussed (increased work satisfaction, research productivity, diversity, promotion, recruitment/retention).

◆ 405 Platelet-Rich Plasma, Bone Morphogenetic Protein, and Stem Cells: What Surgeons Need to Know
Moderator: Brian T. Feeley, MD, San Francisco, CA
Wellington Hsu, MD, Chicago, IL
Harvey Smith, MD, Penn Valley, PA
Seth Williams, MD, Madison, WI

Course presenters discuss the most important biologics in orthopaedic surgery, including growth factors, cell therapy, and pharmacologics to promote bone and soft tissue healing.

◆ 406 Treating Hand Fractures: A Case-Based Approach to their Management and the Ability to Treat the Complications that will Inevitably Occur
Moderator: A. Lee Osterman, MD, Villanova, PA
Joshua M. Abzug, MD, Tsimonum, MD
Raymond G. Gaston, MD, Charlotte, NC
Peter J. Stern, MD, Cincinnati, OH

The management of hand fractures occurring in all age groups is presented in a case-based manner. Detailed discussion regarding pearls and pitfalls of initial treatment, avoiding the potential complications as well as managing them, aid orthopaedic surgeons in their practice.

◆ 407 Common Bone Tumors and Reconstructive Options in Pediatric and Young Adult Patients
Moderator: Joel I. Sorger, MD, Cincinnati, OH
Rajiv Rajani, MD, San Antonio, TX
R. Lor Randall, MD, Salt Lake City, UT
Thomas J. Scharschmidt, MD, Delaware, OH

The course presents an overview and treatment of the most common benign and malignant bone tumors in pediatric and young adult patients.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
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8:06 AM  PAPER 680
Do Outcomes and Complications Differ When Total Elbow Arthroplasty is Performed Acutely for a Distal Humerus Fracture versus After Prior Attempted Internal Fixation?
Anthony L. Logli, MD, Rochester, MN
Steven F. Shannon, MD, Rochester, MN
Chelsea Boe, MD, Rochester, MN
Mark E. Morrey, MD, Rochester, MN
Shawn W. O’Driscoll, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN
Primary and salvage total elbow arthroplasty for distal humerus fractures compare similarly at two-year minimum follow up.

8:12 AM  PAPER 681
Outcomes of Convertible Total Elbow Arthroplasty for the Management of Complex Distal Humeral Fractures in the Elderly
Jason Strelzow, MD, Chicago, IL
Tym Frank, MD, Toronto, ON, Canada
George S. Athwal, MD, London, ON, Canada
Ken Faber, FRCSI, MD, London, ON, Canada
Graham J. King, MD, London, ON, Canada
Complex unreconstructible fractures of the distal humerus can be successfully managed with convertible total elbow arthroplasty with good/excellent patient reported and objective functional outcomes.

8:24 AM  PAPER 682
Risk Factors for Nonunion after Neck of Humerus Fracture
Ewan B. Goudie, MBChB, Edinburgh, United Kingdom
Iain Murray, MD, PhD, Edinburgh, United Kingdom
Christopher M. Robinson, MD, Edinburgh, United Kingdom
The aim of the study was to determine the prevalence of nonunion and risk factors for nonunion in a series of patients with neck of humerus fractures.

8:30 AM  PAPER 683
Locking Plate Fixation of Proximal Humerus Fractures in Patients Over 60 Continues to be Associated with a High Complication Rate
Jonathan D. Barlow, MD, MS, Rochester, MN
Anthony L. Logli, MD, Rochester, MN
Scott P. Steinmann, MD, Rochester, MN
Stephen A. Sems, MD, Rochester, MN
William W. Cross, MD, Rochester, MN
Brandon J. Yuan, MD, Rochester, MN
Michael E. Torchia, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN
Internal fixation of proximal humerus fractures with locking plates in patients over the age of 60 resulted in a 44% complication rate, including a 34% failure rate defined as reoperation or radiographic failure.

8:36 AM  PAPER 684
The Increasing Role of Reverse Total Shoulder Arthroplasty in the Treatment of Proximal Humerus Fractures
Mark T. Dillon, MD, Sacramento, CA
Heather A. Prentice, PhD, San Diego, CA
Bill E. Burfeind, MS, San Diego, CA
Priscilla H. Chan, MS, San Diego, CA
Ronald A. Navarro, MD, Rolling Hills, CA
The utilization of reverse total shoulder arthroplasty in the treatment of proximal humerus fractures has increased over an eight-year period and now exceeds that of hemiarthroplasty.

8:48 AM  PAPER 685
A Higher Reoperation Rate Following Arthroplasty for Failed Fixation versus Primary Arthroplasty for the Treatment of Proximal Humerus Fractures: A Retrospective, Population Based Study
Lauren Nowak, MSc, Toronto, ON, Canada
Michael D. McKee, MD, FRCSC, Phoenix, AZ
Emil H. Schemitsch, MD, London, ON, Canada
These database results suggest that primary arthroplasty may be a better option for patients in whom prognostic factors suggest a high complication rate following ORIF.

8:54 AM  PAPER 686
Reverse Total Shoulder Arthroplasty for Proximal Humerus Fractures in the Elderly Is Cost Effective for Both Payors and Hospitals Compared to Open Reduction and Internal Fixation
Daniel Austin, MD, White River Junction, VT
Michael T. Torchia, MD, Lebanon, NH
Anna Tosteson, ScD, Lebanon, NH
John-Erik Bell, MD, Hanover, NH
In comparison to ORIF, RTSA for proximal humerus fractures in the elderly was associated with a higher quality of life and was cost-effective from both the standpoint of the payor and hospital.

9:00 AM  PAPER 687
Shoulder Arthroplasty for Proximal Humerus Fracture is Not a Typical DRG-483 – Implications for a Bundled Payment Model
Corey Beals, MD, Columbus, OH
Julie Y. Bishop, MD, Columbus, OH
Safdar N. Khan, MD, Columbus, OH
Nikhil Jain, MBBS, MD, Columbus, OH
Andrew S. Neviars, MD, New Albany, OH
Azeem T. Malik, MBBS, Columbus, OH
Shoulder arthroplasty for proximal humerus fractures are a different entity than shoulder arthroplasty for degenerative conditions and therefore should not be included in the same bundled care model.
Reverse total shoulder arthroplasty results in improved active forward flexion when compared to hemiarthroplasty, however functional outcomes of ORIF may still be superior to both hemiarthroplasty and reverse total shoulder arthroplasty.

Proximal humerus fractures are a common fracture in the elderly. Increased comorbidity burden coincides with substantial increases in resource utilization for surgical and nonsurgical treatment.

Hypoalbuminemia is independently associated with significantly increased complications (both major and minor) and readmissions within 30 days of surgery.

The effect of socioeconomic factors had higher impact than fracture pattern on functional scores.

ORIF can be expected to result in higher union rates with the inherent risks of infection and RNI. Finally, at 6 mos, both groups demonstrated higher DASH scores, indicating a lasting effect of injury.
10:06 AM PAPER 530
Is There a Critical Angle that Portends Poor Functional Outcome Scores in Nonoperative Treatment of Isolated Humeral Shaft Fractures?
Lauren M. Nelson, BS, St. Louis, MO
Brian W. Hill, MD, St. Louis, MO
Lisa K. Cannada, MD, Jacksonville, FL
Eben A. Carroll, MD, Winston-Salem, NC
Sarah Dawson, BSN, RN, St. Louis, MO
Michael Del Core, MD, Dallas, TX
Robert Hymes, MD, Falls Church, VA
Heidi Israel, PhD, RN, St. Louis, MO
Clifford B. Jones, MD, FACS, Phoenix, AZ
Andrew J. Marcantonio, DO, Wellesley, MA
Brian Mullis, MD, Zionsville, IN
William T. Obremskey, MD, MPH, Nashville, TN
Robert F. Ostrum, MD, Chapel Hill, NC
David C. Teague, MD, Oklahoma City, OK
Paul Tornetta III, MD, Boston, MA
Michael C. Tucker, MD, Columbia, SC
Isolated Humerus Fractures

In our study, poor DASH scores were observed in humeral shaft fractures at angles lower than previously accepted for nonoperative treatment.

Discussion

8:06 AM PAPER 695
The Changing Face of Total Hip Arthroplasty Failures; An Analysis of 17,853 Primary Hips
Sean A. Sutphen, DO, Dublin, OH
Idelle Vaynberg, New York, NY
Amethia D. Joseph, New York, NY
Yu-Fen Chiu, MS, New York, NY
Christina I. Esposito, PhD, New York, NY
Douglas E. Padgett, MD, New York, NY

Instability, ALTRs, infection, and periprosthetic fracture were the most predominant mechanisms of failure requiring revision THA at our institution.

8:12 AM PAPER 696
Does Age Influence Patient Reported Outcomes in Unilateral Primary Total Hip and Knee Arthroplasty?
Denis Joly, MD, Calgary, AB, Canada
Taryn Ludwig, MD, Calgary, AB, Canada
Irfan Abdulla, MD, Vancouver, BC, Canada
Saboura Mahdavi, MSc, Calgary, AB, Canada
Hoa Khong, MD, MPH, Calgary, AB, Canada
Rajrishi Sharma, FRCS (Ortho), MD, Calgary, AB, Canada

Retrospective review of age stratified outcome scores of 53,498 patients undergoing primary THA and TKA.

Discussion

8:24 AM PAPER 697
Can Spinopelvic Mobility be Predicted in Patients Awaiting Total Hip Arthroplasty? A Prospective, Diagnostic Study of Patients with End-Stage Hip Osteoarthritis
Moritz Innmann, MD, Heidelberg, Germany
Christian Merle, MD, Heidelberg, Germany
Tobias Gotterbarm, MD, Heidelberg, Germany
Paul E. Beaule, FRCS (Ortho), MD, Ottawa, ON, Canada
George A. Grammatopoulos, MRCS, Ottawa, ON, Canada

No predictors could be identified. We recommend performing sitting and standing lateral view radiographs of the lumbar spine and pelvis to determine spinopelvic mobility in patients awaiting THA.

8:30 AM PAPER 698
Same Day and Delayed Discharge Post Total Hip Arthroplasty are Associated with an Increased Risk of Complications
Lauren Nowak, MSc, Toronto, ON, Canada
Emil H. Schemitsch, MD, London, ON, Canada

These data suggest that discharge on days 1 and 2 postoperative is associated with the lowest risk of 30-day complications following THA.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Friday Education Programs

8:36 AM  PAPER 699

**Association Between Race/Ethnicity and Total Hip Arthroplasty Outcomes in a Universally-Insured Population**

*Kanu M. Okike, MD, Honolulu, HI*

Priscilla H. Chan, MD, San Diego, CA
Ronald A. Navarro, MD, Rolling Hills, CA
Adrian D. Hinman, MD, San Leandro, CA
Liz Paxton, MA, Rcho Santa Fe, CA

In contrast to prior research, minority patients in a managed care system had rates of postop complications and lifetime reoperation that were generally similar to, or lower than, white patients.

Discussion

8:48 AM  PAPER 700

**Modern Simultaneous Bilateral Anterior Total Hip Arthroplasty is a Safe and Efficient Surgery**

*Alex Tauchen, MD, Lincolnshire, IL*

Nancy L. Parks, Alexandria, VA
Shazaan Hushmendy, MD, Albany, NY
Kiel J. Pfefferle, MD, Akron, OH
William G. Hamilton, MD, Alexandria, VA

With attention to blood loss and hemoglobin, there was no higher incidence of perioperative complications in simultaneous bilateral total hips compared with matched unilateral anterior total hips.

8:54 AM  PAPER 701

**Can Aspirin be Safely Used as a Venous Thromboembolism Prophylaxis in Sickle Cell Patients Who Undergo Total Hip and Knee Arthroplasties?**

*Jared M. Newman, MD, Brooklyn, NY*

Alexander Chee, Brooklyn, NY
Jack Barnett, BS, Brooklyn, NY
Neil V. Shah, MD, MS, New York, NY
Preston W. Grieco, MD, Thornwood, NY
Matthew A. Harb, MD, Brooklyn, NY
Taylor Murtaugh, BS, New York, NY
Jay Rathod, BS, Brooklyn, NY
Aditya V. Maheshwari, MD, Brooklyn, NY

There were no differences in postoperative thromboembolic, bleeding, or wound complications in patients with sickle cell disease treated with aspirin for VTE prophylaxis when compared to controls.

8:54 AM  PAPER 702

**Femoral and Acetabular Implant Relative Position in Standing and Sitting in Total Hip Arthroplasty Patients: A Preliminary EOS Study**

*Jean Yves Lazennec, MD, Paris, France*

Youngwoo Kim, MD, PhD, Kyoto, Japan
Jihane Hani, Montreuil, France
**Aidin Eslam Pour, MD, Ann Arbor, MI**

This study shows the importance of functional implant orientation assessment as compared to the anatomical measurements.

Discussion

9:12 AM  PAPER 703

**Sagittal Pelvic Translation is Combined with Pelvic Tilt during Standing to Sitting Position: Pre and Postoperative Evaluation in Total Hip Arthroplasty Patients**

*Aidin Eslam Pour, MD, Ann Arbor, MI*

Jean Yves Lazennec, MD, Paris, France
Youngwoo Kim, MD, PhD, Kyoto, Japan
Jihane Hani, Montreuil, France

Moving from standing to sitting position combines pelvic tilt and anteroposterior pelvic translation. Displacement of the hip rotation center is an important variable to consider in dislocated hip.

9:18 AM  PAPER 704

**Patient Risk Factors of Total Hip Arthroplasty Revision in Patients with Osteoarthritis**

*Liz Paxton, MA, Rcho Santa Fe, CA*

Guy Cafri, PhD, San Diego, CA
Michelle Lorimer, Adelaide, Australia
Johan N. Karrholm, MD, Molndal, Sweden
Stephen Graves, MD, Adelaide, Australia
Henrik Malchau, MD, Cambridge, MA
Robert S. Namba, MD, Corona Del Mar, CA
Ola Rolfson, MD, PhD, Molndal, Sweden

Preoperative patient comorbidities predict risk of total hip arthroplasty revision in osteoarthritis patients.

9:24 AM  PAPER 705

**Cluster-Randomized Trial of Opiate-Sparing Analgesia after Discharge from Elective Hip Surgery**

*Aidin Eslam Pour, MD, Ann Arbor, MI*

Jean Yves Lazennec, MD, Paris, France
Youngwoo Kim, MD, PhD, Kyoto, Japan
Jihane Hani, Montreuil, France
**Aidin Eslam Pour, MD, Ann Arbor, MI**

This study shows the importance of functional implant orientation assessment as compared to the anatomical measurements.

Discussion

9:24 AM  PAPER 705

**Cluster-Randomized Trial of Opiate-Sparing Analgesia after Discharge from Elective Hip Surgery**

*Majd Tarabichi, Philadelphia, PA*

Andrew Fleischman, Philadelphia, PA
Gabriel Makar, Rutherford, NJ
Carol Foltz, PhD, Philadelphia, PA
William J. Hozack, MD, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA
Antonia F. Chen, MD, MBA, Newton, MA
Andrew M. Star, MD, Willow Grove, PA
Max Greenky, MD, Philadelphia, PA
Brian Henstenburg, Glenside, PA
Matteo V. Petrera, BS, Philadelphia, PA
Opioid Trial Investigators

A multimodal analgesic regimen with minimal opiates improves pain control while significantly decreasing opiate utilization and opiate-related adverse effects.

Discussion

— The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
9:36 AM  PAPER 706
Primary Total Hip Arthroplasty in Patients Less than 50 Years of Age at a Mean of 16 Years
Andrew J. Bryan, MD, Edina, MN
Tyler E. Calkins, BS, Morgantown, WV
Vasilis Karas, MD, Durham, NC
Chris Culver, Chicago, IL
Denis Nam, MD, MSc, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL
The use of XLPE has led to a significant reduction in the risk of failure in patients < 50 years old, with over 93% survivorship at 15 years. Instability and infection, however, remain substantial causes of failure.

9:42 AM  PAPER 707
Cognitive Task Analysis for Hip Arthroplasty Training
Kartik Logishetty, BS, MBBS, London, United Kingdom
Richard Field, MD, Epsom, United Kingdom
Charles Riviere, MD, PhD, London, United Kingdom
Rahul Bhattacharya, Glasgow, United Kingdom
Chinmay Gupte, PhD, FRCS, London, United Kingdom
Justin P. Cobb, MD, London, United Kingdom
Cognitive task analysis of total hip arthroplasty is a validated educational tool to upskill training surgeons to think like experts.

9:48 AM  PAPER 708
Preoperative Oral Hydration is Safe in Rapid Recovery Total Hip Arthroplasty
Afshin Anoushiravani, MD, New York, NY
James Feng, MD, New York, NY
Nathan H. Harris, MD, Kansas City, MO
Kimberly Jean-Louis, MS, RN, Brooklyn, NY
Ran Schwarzkopf, MD, New York, NY
Roy Davidovitch, MD, New York, NY
Oral hydration 2 hours prior to THA is safe and non-inferior to standard NPO restrictions.

9:54 AM  PAPER 878
Perioperative Periprosthetic Femur Fractures are Strongly Correlated with Fixation Method: An Analysis from the American Joint Replacement Registry
Bryan D. Springer, MD, Charlotte, NC
Caryn Etkin, Rosemont, IL
Peter Shores, Rosemont, IL
Terence J. Goe, MD, Brentwood, CA
David G. Lewallen, MD, Rochester, MN
Kevin J. Bozic, MD, MBA, Austin, TX
This study analyzed data from the American Joint Replacement Registry (AJRR) to determine the relationship of femoral stem fixation to periprosthetic fracture as a cause for revision.

8:00 AM - 10:00 AM  PAPER PRESENTATIONS 709-723
Room 3401
Sports Medicine VII (709-723): Knee II
Moderators: Gregory B. Maletis, MD, Baldwin Park, CA and Brian R. Waterman, MD, Winston-Salem, NC

8:00 AM  PAPER 709
Transphyseal Anterior Cruciate Ligament Reconstruction in the Skeletally Immature: Outcome in 148 Tanner 1-3 Children
Justin P. Roe, MD, Sydney, Australia
Lucy J. Salmon, PhD, Sydney, Australia
Emma L. Heath, BS, MPT, Wollstonecraft, Australia
Claire Monk, BS, Wollstonecraft, Australia
Leo A. Pinczewski, FRACS, Sydney, Australia
Transphyseal ACL reconstruction in skeletally immature children is a safe and effective surgical procedure permitting return to sport and high patient reported outcomes.

8:06 AM  PAPER 710
Comparison of Hamstring versus Bone Tendon Bone Autograft in the Pediatric and Adolescent Population for Anterior Cruciate Ligament Reconstruction
Nirav K. Pandya, MD, Oakland, CA
Arin Kim, MD, San Francisco, CA
The ideal graft choice for pediatric and adolescent ACL reconstruction is still unclear. No significant difference in retear or reoperation rates were seen between hamstring and BTB autografts.

8:24 AM  PAPER 712
No Difference in the KOOS Quality of Life between Anatomic Double-Bundle and Anatomic Single-Bundle Anterior Cruciate Ligament Reconstruction of the Knee: A Prospective, Randomized, Controlled Trial with Two Years Follow Up
Cathrine Aaga, MD, Fornebu, Norway
Ingrid Trøan, MSc, PT, Oslo, Norway
Steinar Johansen, MD, Oslo, Norway
Stig Heir, MD, PhD, Sandvika, Norway
Morten Wang W. Fagerland, MSc, PhD, Oslo, Norway
Lars Engebretsen, MD, Oslo, Norway
There was no difference between anatomic double-bundle and anatomic single-bundle ACL reconstructions in terms of PROs, knee laxity measures, or return to sports at 2-years follow up.

8:30 AM  PAPER 713
Effect of Graft Choice on the Six-Year Outcome of Revision Anterior Cruciate Ligament (ACL) Reconstruction in the Multicenter ACL Revision Study Cohort
Rick W. Wright, MD, St. Louis, MO
MARS Group
Autograft shows a decreased risk in graft rupture at six years follow up. Surgeon education regarding the findings in this study can result in potentially improved revision ACL results.
8:36 AM
Failure and Reoperation Rates Following Arthroscopic Primary Repair Versus Reconstruction of the Anterior Cruciate Ligament
Jelle P. Van Der List, MD, Amsterdam, Netherlands
Anne Jonker, New York, NY
Gregory S. DiFelice, MD, New York, NY

This study assesses the failure rates and reoperation rates following arthroscopic primary repair versus reconstruction of the anterior cruciate ligament in a large cohort of patients.

Discussion

8:48 AM
The Risk of Knee Arthroplasty Following Anterior Cruciate Ligament Reconstruction: A Review of the National Hospital Episode Statistics for England, United Kingdom
Simon G. Abram, MA, MRCS, Oxford, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
David J. Beard, MA, MSc, Oxford, United Kingdom
Andrew J. Price, FRCS, Oxford, United Kingdom

This 20-year national cohort study indicates ACL reconstruction patients undergo knee arthroplasty more frequently aged 30-39 (RR 16.5), 40-49 (RR 8.0), and 50-59 (RR 2.4), versus general population.

8:54 AM
Conversion Rates and Timing to Total Knee Arthroplasty Following Anterior Cruciate Ligament Reconstruction: A United States Population-Based Study of Over 100,000 ACL Reconstructions
Jacob Bobman, MD, New York, NY
Cory Mayfield, Los Angeles, CA
Nathanael D. Heckmann, MD, Los Angeles, CA
Hyunwoo P. Kang, MD, Los Angeles, CA
Keemia S. Heidari, BA, Orange, CA
Alexis Rounds, BS, Los Angeles, CA
Santino L. Rosario, BA, Los Angeles, CA
Erik Mayer, BS, Los Angeles, CA
George F. Hatch, MD, Los Angeles, CA
Alexander Weber, MD, Los Angeles, CA
USC Sports Medicine Section

Overall, patients have excellent long-term survival rates for ACLR. Those with concomitant procedures undergoing ACLR have reduced survivorship compared to isolated ACLR.

9:00 AM
Patient-Related Risk Factors for Contralateral Anterior Cruciate Ligament Tear after ACL Reconstruction: An Analysis of 3,707 Primary ACL Reconstructions
Jourdan M. Cancienne, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

In the present study we are able to power an analysis to identify several significant patient risk factors for contralateral ACL rupture, including younger age, gender, tobacco use, and depression.

9:12 AM
Is Posterior Tibial Slope a Significant Risk Factor for Anterior Cruciate Ligament Reconstruction Failure?
Edoardo Gaj, Rome, Italy
Antonio Ponzo, MD, Roma, Italy
Angelo De Carli, MD, Rome, Italy
Eduardo Monaco, MD, Rome, Italy
Antonio Vadala, MD, Rome, Italy
Andrea Redler, MD, Rome, Italy
Andrea Ferretti, MD, Rome, Italy

Posterior tibial slope as measured in standard X-rays should be considered with caution as risk factor for graft failure after ACL reconstruction.

9:18 AM
Patients with Failed Anterior Cruciate Ligament Reconstruction Have an Increased Posterior Lateral Tibial Plateau Slope: A Case-Controlled Study
Stefano Zaffagnini, MD, Bologna, Italy
Alberto Grassi, MD, Bologna, Italy
Luca Macchiarella, MD, Bologna, Italy
Francisco X. Urrizola, Concepción, Chile
Ilaria Cucurnia, Bologna, Italy
Federico Raggi, MD, Bologna, Italy
Tomaso Roberti Di Sarsina, MD, Bologna, Italy
Federico Stefanelli, MD, Bologna, Italy

The present work shows the first in vivo quantitative analysis able to define in a male population the influence of knee joint anatomy on the risk of ACL surgical reconstruction failure.

9:24 AM
Midbundle Femoral Positioning in Single Bundle Anterior Cruciate Ligament Reconstruction Increases Graft Failure Compared to Standard Anatomic Reconstruction
John Dabis, MBBS, Surrey, United Kingdom
Sam K. Yasen, MBBS, MSc, Basingstoke, United Kingdom
Michael J. Risebury, Basingstoke, United Kingdom
Adrian J. Wilson, FRCS (Ortho), BBBS, Basingstoke, United Kingdom

Data from this case series suggests that positioning the femoral socket within the footprint of the anteromedial bundle may reduce risk of rupture.

9:36 AM
Prospective Clinical Feasibility Study of a Poly-L-Lactic Acid Scaffold in Primary Anterior Cruciate Ligament Reconstruction with Three-Year Follow Up
Cornelis van Egmond, MD, Nieuweveen, Netherlands
Robert A. Stanton, MD, Fairfield, CT
Robert A. Arciero, MD, Farmington, CT
Pieter Van Dyck, MD, Antwerp, Belgium
Reinoud Brouwer, MD, Haren, Netherlands

To assess the safety and feasibility of a bioresorbable, poly-L-lactic acid (PLLA) scaffold for primary ACL reconstruction in a prospective, consecutive, clinical study.

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* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**PAPER 722**

**A Randomized Clinical Trial for Safety and Efficacy of Human Umbilical Cord Blood Derived Mesenchymal Stem Cells to Enhance Tendon Graft Healing in Anterior Cruciate Ligament Reconstruction with Two Years Follow Up**

**Sang Won Moon, MD, Busan, Republic of Korea**  
**Joon Ho Wang, MD, Seoul, Republic of Korea**  
**Sin Hyung Park, MD, Bucheon, Republic of Korea**

The safety and efficacy of human umbilical cord blood – derived mesenchymal stem cells to enhance tendon graft healing in anterior cruciate ligament reconstruction.

**9:48 AM**  

**PAPER 723**

**Postoperative Opioid Consumption is Affected by Number of Tablets Prescribed After Anterior Cruciate Ligament Reconstruction**  
**Kevin X. Farley, BA, Atlanta, GA**

Albert Anastasio, BA, Atlanta, GA  
Arun R. Kumar, MD, Jacksonville, FL  
Ajay Premkumar, MD, MPH, New York, NY  
Michael B. Gottschalk, MD, Atlanta, GA  
John W. Xerogeanes, MD, Atlanta, GA

Decreasing the number of opioid tablets prescribed after ACL reconstruction reduced the total number of opioids consumed postoperatively. Education has no effect on total narcotic consumption.

**Discussion**

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**SYMPOSIA**

**11:00 AM - 12:30 PM**  
Room 4401

ˇV Annual Meeting Highlights

**Moderators:** Leesa M. Galatz, MD, New York, NY and Marc R. Safran, MD, Redwood City, CA

The Annual Meeting Highlights symposium features highlights from the best papers and posters presented at the 2019 Annual Meeting as chosen by the AAOS Program Committee.

I. **Practice Management**  
   Jack M. Bert, MD, Woodbury, MN

II. **Foot and Ankle**  
    Mark C. Drakos, MD, New York, NY

III. **Pediatrics**  
    Eric W. Edmonds, MD, San Diego, CA

IV. **Shoulder and Elbow**  
    Sara L. Edwards, MD, San Francisco, CA

V. **Adult Reconstruction Hip**  
    Beau S. Konigsberg, MD, Omaha, NE

VI. **Trauma**  
    James C. Krieg, MD, Philadelphia, PA

VII. **Adult Reconstruction Knee**  
    Sumon Nandi, MD, Ottawa Hills, OH

VIII. **Hand and Wrist**  
    Mark S. Rekant, MD, Cherry Hill, NJ

IX. **Sports Medicine**  
    Seth Sherman, MD, Columbia, MO

X. **Spine**  
    Kern Singh, MD, Chicago, IL

XI. **Musculoskeletal Oncology**  
    Felasfa M. Wodajo, MD, Fairfax, VA
Further optimization of excellent THA results requires minimizing the most remaining common complications; this symposium explores strategies to further reduce the main current THA complications.

I. What Are the Most Common Reasons THAs Still Fail in 2018/2019?
   James A. Browne, MD, Charlottesville, VA

II. Preventing Hip Dislocation: New Technologies to Optimize Implant Position: Are They Ready for Primetime
    David F. Dalury, MD, Baltimore, MD

III. Preventing Early Periprosthetic Femur Fracture by Implant Fixation Choice: Which Sub-populations Should Still Get a Cemented Stem in 2019?
    Charles M. Davis, MD, PhD, Hershey, PA

IV. Preventing Early Periprosthetic Femur Fracture with Tapered Uncemented Stems
    Paul J. Duwelius, MD, Portland, OR

V. Preventing Uncemented Femoral Component Loosening after Direct Anterior THA
    William G. Hamilton, MD, Alexandria, VA

VI. Preventing Taper Corrosion
    Joshua J. Jacobs, MD, Chicago, IL

VII. Preventing Uncemented Femoral Component Loosening: Optimizing Implant Choice in 2019
    Steven J. MacDonald, MD, London, ON, Canada

VIII. Preventing Early Hip Dislocation: Recognizing the Patients at High Risk
    Arthur L. Malkani, MD, Louisville, KY

IX. Preventing Early Hip Dislocation in At Risk Patients: Implant Selection: Big Heads? Dual Mobility?
    Douglas E. Padgett, MD, New York, NY

X. Preventing Iliopsoas Tendinopathy
    Robert T. Trousdale, MD, Rochester, MN

INSTRUCTIONAL COURSE LECTURES

11:00 AM - 12:30 PM

◆ 421 New Paradigms in the Etiology, Pathogenesis, and Treatment of Osteonecrosis
   Moderator: Stuart B. Goodman, MD, PhD, Redwood City, CA
   Philippe Hernigou, PhD, Creteil, France
   Lynne C. Jones, PhD, Jarrettsville, MD
   Michael A. Mont, MD, New York, NY
   This ICL reviews novel methods for identification of high-risk patients, preventative measures, earlier diagnosis, and cutting-edge treatments to mitigate the progression of osteonecrosis.

◆ 422 Management of Periprosthetic Joint Infection: What Has Happened Over the Last Few Years?
   Moderator: Javad Parvizi, MD, FRCS, Philadelphia, PA
   Thorsten Gehrke, MD, Hamburg, Germany
   Carlos Higuera Rueda, MD, Weston, FL
   Carlo Romano, MD, Milano, Italy
   This ICL provides attendees with the most recent developments related to prevention, diagnosis, and treatment of periprosthetic joint infection (PJI).

◆ 423 Pathologic Postoperative Pain: What Every Orthopaedic Surgeon Should Know
   Moderator: Catherine Curtin, MD, Palo Alto, CA
   Vivianne L. Tawfik, MD, PhD, Stanford, CA
   Orthopaedic procedures result in some patients developing pain that persists long after the wounds have healed. This course reviews pain from mechanism to treatment.

◆ 424 Sports Injuries of the Hand, Wrist, and Elbow
   Moderator: David M. Brogan, MD, St. Louis, MO
   Christopher J. Dy, MD, MPH, St. Louis, MO
   Fraser J. Leversedge, MD, Durham, NC
   Daniel Osei, MD, MSc, New York, NY
   This course offers a comprehensive overview of the bone and soft tissue injuries that commonly occur in athletes of all ages. The latest treatment advances are emphasized.

◆ 425 Pediatric Tumor Management: Current and Controversial
   Moderator: Mihir Thacker, MD, Wilmington, DE
   Alexandre Arkader, MD, Philadelphia, PA
   Odion T. Binitie, MD, Tampa, FL
   Antoinette W. Lindberg, MD, Seattle, WA
   The diagnostic as well as treatment principles of pediatric bone and soft tissue tumors as well as controversies and emerging treatment methods are discussed.

◆ 426 How to Receive Your Comprehensive Care for Joint Replacement (CJR) Reconciliation Check from Medicare: Maximizing Your CJR Quality Score
   Moderator: Gregory A. Brown, MD, PhD, Tacoma, WA
   David S. Jevsevar, MD, MBA, Grantham, NH
   Alexandra E. Page, MD, La Jolla, CA
   Adolph J. Yates, MD, Pittsburgh, PA
   The Comprehensive Care for Joint Replacement requires a Quality Score to receive any reconciliation payments. The details of the quality score are explained.
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<thead>
<tr>
<th>Room</th>
<th>Session</th>
<th>Title</th>
<th>Moderator(s)</th>
<th>Additional Participants</th>
</tr>
</thead>
<tbody>
<tr>
<td>3304</td>
<td>431</td>
<td>Management of the Challenging Rotator Cuff Tear</td>
<td>Brian R. Waterman, MD, Winston-Salem, NC&lt;br&gt;Michael Freehill, MD, Ann Arbor, MI&lt;br&gt;William N. Levine, MD, New York, NY</td>
<td>This course explores the systematic evaluation and management of challenging rotator cuff tears, including repair, augmentation, superior capsular reconstruction, balloon arthroplasty, and orthobiologic adjuncts.</td>
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<tr>
<td>3304</td>
<td>435</td>
<td>MRI of the Spine: Essentials for the Orthopaedic Surgeon</td>
<td>William Morrison, MD, Philadelphia, PA&lt;br&gt;Darryl B. Sneag, MD, New York, NY</td>
<td>This course helps clinicians develop a systematic structured checklist approach to the accurate interpretation of spine MRI exams emphasizing standardized nomenclature and grading schemes.</td>
</tr>
<tr>
<td>3304</td>
<td>439</td>
<td>Optimizing Anterior Cruciate Ligament (ACL) Outcomes: What Else Needs Fixing Besides the ACL?</td>
<td>Andreas H. Gomoll, MD, New York, NY&lt;br&gt;Anunnziato Amendola, MD, Durham, NC&lt;br&gt;Alan Getgood, MD, FRCS (Ortho), London, ON, Canada&lt;br&gt;Sabrina Strickland, MD, New York, NY</td>
<td>This ICL discusses how to identify and treat associated pathology of meniscus, ligaments, alignment, and cartilage that can compromise outcomes after anterior cruciate ligament reconstruction.</td>
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<tr>
<td>3403</td>
<td>430</td>
<td>Femur Fractures: Subtrochanteric to Supracondylar</td>
<td>Philip R. Wolinsky, MD, Sacramento, CA&lt;br&gt;Paul B. Gladden, MD, New Orleans, LA&lt;br&gt;Nirmal C. Tejwani, MD, New York, NY</td>
<td>Femoral shaft fractures are common injuries but still can have management issues. This course uses a short didactic session combined with case-based discussions on femoral shaft fractures, from the subtrochateric to the supracondylar regions, to examine treatment options and methods to avoid complications in the treatment of these fractures.</td>
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<tr>
<td>4105</td>
<td>431</td>
<td>Top Tips for YOUR Practice</td>
<td>Julie E. Adams, MD, Rochester, MN&lt;br&gt;Lisa K. Cannada, MD, Jacksonville, FL&lt;br&gt;Wudbhav N. Sankar, MD, Wynnewood, PA&lt;br&gt;Kristy L. Weber, MD, Philadelphia, PA</td>
<td>This ICL focuses on top tips for YOUR patients and practice highlighting commonly missed problems and high-yield tips and tricks in trauma, peds, hand, and tumor.</td>
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### FRIDAY EDUCATIONAL PROGRAMS

#### PAPER PRESENTATIONS 724-732

<table>
<thead>
<tr>
<th>Time</th>
<th>Title</th>
<th>Authors</th>
<th>Abstract</th>
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<tbody>
<tr>
<td>11:00 AM</td>
<td>Radiographic Evaluation of Revised Unicompartmental Knee Replacements in the United Kingdom National Joint Registry</td>
<td>James Kennedy, MBBS, Oxford, United Kingdom et al.</td>
<td>This multicenter study of medial UKR identified inappropriate patient selection, technique, and revisions in 80% of revised UKR. This may explain differences between registry and cohort revision rates.</td>
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<tr>
<td>11:06 AM</td>
<td>Functional Outcomes and Quality of Life after Unicompartmental Knee Arthroplasty in Patients 55 Years and Younger - A Minimum 10 Year Follow-Up Study</td>
<td>Merrill Lee, MBBS, Singapore, Singapore et al.</td>
<td>The present study gives an overview on how femoral and tibial component should be placed in robotic-assisted lateral UKAs, based on a large cohort of patients evaluated at short-term follow up.</td>
</tr>
<tr>
<td>11:12 AM</td>
<td>The Influence of Obesity on Clinical Outcomes of Fixed Bearing Unicompartmental Knee Arthroplasty: A Minimum 10 Year Follow-Up Study</td>
<td>Sheng Xu, MBBS, MRCSED, Singapore, Singapore et al.</td>
<td>This study showed that preoperative radiographic patellofemoral osteoarthritis does not negatively affect mid-term functional outcomes following medial or lateral UKA.</td>
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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
Friday Educational Programs

11:54 AM
PAPER 731
The Lack of Bone on Bone Contact in the Medial Compartment Should not be a Strict Contraindication for Mobile-Bearing Unicompartmental Knee Arthroplasty
Juan S. Vargas-Hernandez, MD, Rochester, MN
Samuel W. Carlson, MD, Rochester, MN
Bayard C. Carlson, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
The presence of less than 2 mm of joint space, but with lack of bone-on-bone arthritis, should not be a contraindication for mobile-bearing UKA.

12:00 PM
PAPER 732
Survivorship and Functional Outcomes of Robotic-Arm-Assisted Partial Knee Arthroplasty: A Single Surgeon Study
Laura J. Kleeblad, MD, New York City, NY
Niels Laas, MD, Alkmaar, Netherlands
Andrew D. Pearle, MD, Rye, NY
This study assessed survivorship and functional outcomes of a large patient cohort that underwent robotic-arm-assisted unicompartmental knee arthroplasty, either medial, lateral or patellofemoral.

11:00 AM - 12:30 PM
Palazzo Ballroom J
Pediatrics III (733-741): Potpourri of Pediatric Problems III
Moderator: Christopher A. Iobst, MD, Columbus, OH and Henry J. Iwinski, MD, Lexington, KY

11:00 AM
PAPER 741
Safe Transportation In-Spica Following Surgical Treatment of Infantile Developmental Dysplasia of the Hip: Solutions and Threats
Wuddhav N. Sankar, MD, Wynnewood, PA
Alexander J. Adams, BS, Philadelphia, PA
Mitchell Johnson, Clarkson, MI
Kelly A. Ryan, NP, Philadelphia, PA
Sharon B. Farrell, CRNP, Philadelphia, PA
Meg Morro, BSN, RN, Wallingford, PA
DDH patients with spica casting require specialized car restraints for safe transport, which are challenged by cost and availability from recent discontinuation of the primarily available car seat.

11:06 AM
PAPER 734
Measuring the Acetabular Index: An Accurate and Reliable Alternative Method of Measurement
Benjamin Sherman, DO, Moreno Valley, CA
Francois D. Lalonde, MD, Orange, CA
John Schlechter, DO, Orange, CA
The alternative method of measuring the acetabular index is accurate and has a “very high” intraobserver and interobserver reliability.

11:12 AM
PAPER 735
Over-The-Top versus All-Epiphysial Technique for Physeal Sparing Anterior Cruciate Ligament Reconstruction
Nirav K. Pandya, MD, Oakland, CA
Brian T. Feeley, MD, San Francisco, CA
Stephanie E. Wong, MD, San Francisco, CA
Over-the-top and all-epiphysial ACL reconstructions appear to have similar rates of retear and growth disturbance in the skeletally immature population.

11:24 AM
PAPER 736
Outcomes of Arthroscopy-Assisted Closed Reduction and Percutaneous Pinning for a Displaced Pediatric Lateral Condylar Humeral Fracture
Seungcheol Kang, MD, Seoul, Republic of Korea
Soo-Sung Park, Seoul, Republic of Korea
We presented arthroscopy-assisted technique for the children with lateral condylar humeral fractures. Based on its clinical outcomes, it seems to be a safe and appropriate surgical technique.

11:30 AM
PAPER 737
Results of Physeal Bar Resection at a Single Pediatric Institution
Kshitij Manchanda, MD, Dallas, TX
Jennifer Rodgers, MA, Dallas, TX
Yassine Kanaan, MD, Dallas, TX
David A. Podeszwa, MD, Dallas, TX
John G. Birch, MD, Dallas, TX
Approximately 40% of patients in this series demonstrated useful resumption of growth after physeal bar resection.

11:36 AM
PAPER 738
How Accurate is the Multiplier Method in Predicting the Timing of Angular Correction after Hemiepiphysiodesis?
Hady H. Eltayeby, MBCHB, Alexandria, Egypt
Chukwuweike Gwam, BS, MD, Baltimore, MD
Margaret M. Frederick, PhD, Baltimore, MD
John E. Herzenberg, MD, Baltimore, MD
Multiplier Method may underpredict treatment duration when calculating angular correction timing after hemiepiphysiodesis. Predictions with skeletal age were not more accurate than chronological age.

11:48 AM
PAPER 739
Continued Deterioration in Pulmonary Function at Minimum 18-Year Follow Up from Early Thoracic Fusion in Nonneuromuscular Scoliosis
Daniel Bouton, MD, Portland, OR
Lori A. Karol, MD, Dallas, TX
Kiley F. Poppino, BS, Dallas, TX
Charles E. Johnston, MD, Dallas, TX
There is a continued decline in pulmonary function at minimum 18-year follow up for patients undergoing early thoracic fusion for nonneuromuscular scoliosis, which can be life-threatening.

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PAPER 740

Occipital Plate Cervical Spine Fixation in Pediatric Population
Lara L. Cohen, BS, MPH, Boston, MA
Brian Yang, BA, Boston, MA
Michael P. Glotzbecker, MD, Boston, MA
John B. Emans, MD, Boston, MA
Lawrence I. Karlin, MD, Boston, MA
Brian D. Snyder, MD, PhD, Boston, MA
Michael T. Hresko, MD, Boston, MA
Daniel J. Hedequist, MD, Boston, MA

Thirty-six patients at a tertiary care pediatric hospital had cervical spine fixation using occipital plates. Among this high risk population, the technique was found to be safe and effective.

PAPER 733

Acetabular Labral Tears in the Adolescent Athlete: Results of a Graduated Management Protocol from Therapy to Arthroscopy
James D. Bomar, San Diego, CA
Andrew Murtha, MD, San Antonio, TX
Kristina P. Johnson, ATC, OPA-C, San Diego, CA
Vidyadhari V. Upasani, MD, San Diego, CA
Andrew T. Pennock, MD, Rancho Santa Fe, CA

Adolescent patients with hip pain demonstrate similar functional outcomes at an average of two years when managed with a nonoperative protocol despite documented evidence of a labral tear.

PAPER 742

Return of Shoulder Function Following Posterior Spinal Fusion
Gabriela A. Villamor, BA, Los Angeles, CA
Lindsay M. Andras, MD, Los Angeles, CA
Paul D. Choi, MD, Pasadena, CA
Vernon T. Tolo, MD, Los Angeles, CA
Priscella Chan, Los Angeles, CA
Joshua Yang, BA, Los Angeles, CA
David L. Skaggs, MD, Los Angeles, CA

Despite prior reports suggesting limitations in shoulder function following PSF, standardized functional assessments find pain and function return to normal ~6 weeks for both AIS and non-AIS patients.

PAPER 743

Methylene Blue is an Effective Disclosing Agent for Identification of Bacterial Biofilms on Orthopaedic Implants
Jeremy D. Shaw, MD, MS, Salt Lake City, UT
Nicholas Ashton, PhD, Salt Lake City, UT
Jeremy Gililland, MD, Salt Lake City, UT
Darrel S. Brodke, MD, Salt Lake City, UT
Brandon D. Lawrence, MD, Salt Lake City, UT
Erik N. Hansen, MD, San Francisco, CA
Dustin Williams, PhD, Salt Lake City, UT

Methylene blue does not stain implants and functions as an effective disclosing agent for S. aureus and P. aeruginosa biofilms in vitro, which may allow for eradication of biofilms once visualized.

PAPER 744

Thoracic Computed Tomography Hounsfield Units Accurately Predicts Low Bone Mineral Density of the Femoral Neck
Sameer Saxena, MD, Bethesda, MD
Donald Colantonio, MD, Rockville, MD
Scott Wagner, Rockville, MD

Hounsfield unit measurements taken from the T4 vertebral body correlate positively with dual x-ray absorptiometry (DXA) T-score. This technique provides a novel technique of opportunistic screening.

PAPER 745

Impact of Preoperative Opioid Usage on Patient-Reported Outcomes in Transforaminal Lumbar Interbody Fusion
Aaron Hockley, FRCSC, New York, NY
David Ge, BA, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Mohamed A. Moawad, MPH, New York, NY
Peter G. Passias, MD, Westbury, NY
Thomas J. Errico, MD, New York, NY
Aaron J. Buckland, FRACS, MBBS, New York, NY
Themistocles S. Protopsaltis, MD, New York, NY
Charla R. Fischer, MD, New York, NY

Patients with a history of preoperative opioid use have worse baseline EQ-5D VAS and ODI scores and greater functional improvement postoperatively in these PROs compared to opioid naïve patients.

PAPER 746

En Bloc Hemi-Vertebrectomy for the Treatment of Lumbar Spinal Tumors: A Prospective Study
Takaki Shimizu, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satosho Kato, MD, Kanazawa, Japan
Kazuya Shinmura, MD, Ishikawa, Japan
Noriaki Yokogawa, MD, Kanazawa, Japan
Norihiro Oku, MD, Kanazawa, Japan
Ryo Kitagawa, Ishikawa, Japan
Hiroyuki Tsuichiya, MD, Kanazawa, Japan

En bloc hemi-vertebrectomy of lumbar spine could minimize the postoperative muscle weakness. This is a useful procedure if the tumor is localized on unilateral side of the vertebra.
The Effect of Local versus Intravenous Steroids on Dysphagia and Dysphonia Following Anterior Cervical Discectomy and Fusion: One-Year Results of a Single-Blinded, Prospective, Randomized Control Trial

Tyler J. Jenkins, MD, Chicago, IL
Rueben Nair, MD, Naperville, IL
Surabhi A. Bhatt, BS, Chicago, IL
Brett D. Rosenthal, MD, Morton Grove, IL
Jason W. Savage, MD, Gates Mills, OH
Wellington K. Hsu, MD, Chicago, IL
Alok A. Patel, MD, Chicago, IL

Local and IV steroid administration after ACDF yields better outcomes for dysphagia when compared to controls. This is particularly evident in the reduction of severe dysphagia by local steroid.

Discussion

Fusion Rate with Stand-Alone Interbody Cage for Adjacent Segment Disease after Anterior Cervical Discectomy and Fusion

Sapan D. Gandhi, MD, Royal Oak, MI
Daniel R. Possley, DO, Birmingham, MI
Adam Fahs, MD, Dearborn, MI
Kevin C. Baker, PhD, Royal Oak, MI
Jad Khalil, MD, Bloomfield Hills, MI
Daniel K. Park, MD, Bloomfield Hills, MI

Stand-alone cage for ASD after ACDF achieved fusion at a lower rate and more often required revision surgery for pseudarthrosis compared to primary, 1-level ACDF.

Fibromyalgia as a Predictor of Increased Postoperative Complications, Readmission Rates and Hospital Costs in Patients Undergoing Posterior Lumbar Spine Fusion

Augustus Rush, MD, Miami, FL
Chester J. Donnally, MD, Miami, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Dhanur Damodar, MD, Miami, FL
Vadim Goz, MD, Salt Lake City, UT
Ajit M. Vakharia, BS, Kennesaw, GA
Nathan H. Lebwohl, MD, Miami, FL

Patients with concomitant diagnosis of fibromyalgia have higher rate of postoperative complications, readmission rates, and hospital costs following primary 1 to 2 level lumbar fusions.

Comparative Outcome Analysis of Spinal Anesthesia versus General Anesthesia in Lumbar Fusion Surgery

Richard Sekerak, BS, Bronx, NY
Matthew Morris, BA, Bronx, NY
Alok D. Sharan, MD, New York, NY

We demonstrate that spinal anesthesia is a safe and cost-effective anesthetic modality for lumbar fusion with better perioperative outcomes and reduced net operative cost compared to general anesthesia.

Discussion

SYMPOSIUM

1:30 PM - 3:30 PM

Palazzo Ballroom E

Hot Topics and Controversies in Total Knee Arthroplasty

Moderator: Jay R. Lieberman, MD, Los Angeles, CA

Review the latest controversies associated with knee arthroplasties. After each series of lectures cases are reviewed to allow the audience to determine optimal treatment strategies.

I. Tourniquet Use: Do Not Cut Off the Blood Supply Negative
Matthew P. Abdel, MD, Rochester, MN

II. Overnight Stays Are For Business Trips Negative
C. Lowry Barnes, MD, Little Rock, AR

III. Patella Resurfacing: An Unnecessary Step Affirmative
Robert L. Barrack, MD, St. Louis, MO

IV. Patella Resurfacing: An Unnecessary Step Negative
Michael P. Bolognesi, MD, Durham, NC

V. Tourniquet Use: Do Not Cut Off the Blood Supply Affirmative
James A. Browne, MD, Charlottesville, VA

VI. Overnight Stays Are For Business Trips Affirmative
Craig J. Della Valle, MD, Chicago, IL

VII. Kinematic Alignment: The Most Logical Approach Negative
Richard Iorio, MD, Boston, MA

VIII. Unicondylar Knee Arthroplasty: More is Better Negative
Adolph V. Lombardi, Jr, MD, New Albany, OH

IX. Tourniquet Use: Do Not Cut Off the Blood Supply Negative
Steven J. MacDonald, MD, London, ON, Canada

X. Unicondylar Knee Arthroplasty: More is Better Affirmative
William J. Maloney, MD, Redwood City, CA

XI. Cementless TKA: The Future Is Now Negative
R. Michael Meneghini, MD, Fishers, IN

XII. Kinematic Alignment: The Most Logical Approach Affirmative
Mark W. Pagnano, MD, Rochester, MN

XIII. Cementless TKA: The Future is Now Negative
Robert T. Trousdale, MD, Rochester, MN

INSTRUCTIONAL COURSE LECTURES

1:30 PM - 3:30 PM

441 Total Hip Arthroplasty – How Do I Get Out of this Problem?
Moderator: Kevin L. Garvin, MD, Omaha, NE
Paul J. Duwelius, MD, Portland, OR
Curtis W. Hartman, MD, Omaha, NE
Arthur L. Malkani, MD, Louisville, KY

This course is designed to provide the surgeon with strategies to manage the most common challenges faced intraoperatively and early postoperatively after total hip arthroplasty (THA). We provide recommendations from leading surgeons on how to deal with these common challenges and consensus opinion by the panel on the best way to solve problems.

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442 Challenges and Controversies in Foot and Ankle Trauma
Moderator: Thomas G. Harris, MD, Altadena, CA
Jesse F. Doty, MD, Hixson, TN
Troy S. Watson, MD, Las Vegas, NV
Patrick Yoon, MD, Minneapolis, MN
This course provides a practical, case-based lecture on the current state of the art in common foot and ankle trauma. It covers how to avoid common pitfalls as well as emphasizes how to achieve good surgical and nonsurgical outcomes. Each talk highlights easy-to-miss injuries as well.

443 Owning Osteoporosis Care in Your Practice
Moderator: Clifford B. Jones, MD, FACS, Phoenix, AZ
Kenneth A. Egol, MD, New York, NY
Kyle J. Jeray, MD, Greenville, SC
Laura L. Tosi, MD, Washington, DC
Osteoporosis is not just a disease of women and is relevant to patients of all ages. By attending this course, participants can improve treatment of patients with fragility fractures and learn the mechanics of setting up an inpatient and outpatient osteoporosis practice.

444 Simple Hand Problems that Aren’t: Avoiding Snakes in the Grass
Moderator: Julie E. Adams, MD, Rochester, MN
Mark E. Baratz, MD, Bethel Park, PA
Michael S. Bednar, MD, Maywood, IL
A. Lee Osterman, MD, Villanova, PA
Some hand problems may seem deceptively simple but with improper management can become “bad actors.” Participants learn to recognize and appropriately manage these conditions and avoid complications.

445 Joint Preservation in the Pediatric and Adolescent Knee
Moderator: Charles A. Popkin, MD, Dobbs Ferry, NY
Kevin G. Shea, MD, Boise, ID
Eric J. Strauss, MD, Scarsdale, NY
Philip L. Wilson, MD, Dallas, TX
This course reviews the latest techniques to treat complex problems in the pediatric knee, including meniscus transplant, tibial periosteum transfer, and management of failed osteochondritis dissecans (OCD).

446 The Ten Elbow Cases that Helped Me to Improve Patient Care
Moderator: Raffy Mirzayan, MD, Baldwin Park, CA
Jonathan C. Levy, MD, Ft. Lauderdale, FL
Anand M. Murthy, MD, Baltimore, MD
Surena Namdari, MD, Philadelphia, PA
This ICL presents ten common elbow problems and an overview of current diagnostic and treatment principles through a case-based format.

447 Is It the Back or the Hip? Differentiating Lumbar Spine from Hip Pathologies: Key Points of Evaluation and Treatment
Moderator: Stuart H. Hershman, MD, Boston, MA
Robert P. Norton, MD, Boca Raton, FL
Jonathan M. Vigdorchik, MD, New York, NY
Thomas Youm, MD, New York, NY
This course focuses on the causes and overlapping clinical presentation of lumbar spine and hip pathology. Key diagnostic methods, clinical signs, and exam findings used to differentiate them, as well as common treatment options, are discussed.

448 Tips and Tricks for Common, Yet Difficult Osteopenic Fractures in the Community
Moderator: Frank A. Liporace, MD, Englewood Cliffs, NJ
Derek J. Donegan, MD, Philadelphia, PA
Mark A. Mighell, MD, Tampa, FL
Richard S. Yoon, MD, Jersey City, NJ
This instructional course provides decision-making pearls and tricks for both fixation and arthroplasty for osteopenic proximal humerus, distal humerus, and displaced femoral neck fractures.

449 Lower Extremity Fractures: Tips and Tricks for Nails and Plates
Moderator: Hassan R. Mir, MD, MBA, Tampa, FL
Frank Aviucea, MD, Orlando, FL
Joshua Langford, MD, Orlando, FL
Daniel J. Stinner, MD, Nashville, TN
This course provides the community fracture surgeon with reduction tools, tips, and tricks to facilitate lower extremity fracture reductions and subsequently improve patient outcomes.

450 Shoulder Arthritis in the “Aging” Athlete: Management Strategies in 2019 from Biologics to Arthroscopy to Arthroplasty
Moderator: Stephen F. Brockmeier, MD, Charlottesville, VA
Brian J. Cole, MD, MBA, Chicago, IL
Seth C. Gamradt, MD, Los Angeles, CA
Frank Petrigliano, MD, Santa Monica, CA
In an aging but still active population, incidence of degenerative shoulder conditions continue to rise. Management options including biologics, arthroscopy, and arthroplasty will be outlined.

4550RS Tendinopathy: Merging Science and Medicine to Understand Treatment Options
Moderator: Kurt P. Spindler, MD, Lyndhurst, OH
Jason L. Dragoo, MD, Redwood City, CA
Leesa M. Galatz, MD, New York, NY
Neal L. Miller, MD, Glassow, United Kingdom
Stuart D. Miller, MD, Baltimore, MD
Scott A. Rodeo, MD, New York, NY
Tendinopathy represents chronic failure to heal. Evidence-based solutions are discussed in the context of challenging case presentations.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
485  Anterior Cruciate Ligament Revision Reconstruction Technical Issues: A Case-Based Approach  
Moderator: Michael J. Stuart, MD, Rochester, MN  
Joel L. Boyd, Minneapolis, MN  
Christopher L. Camp, MD, Rochester, MN  
Thomas M. DeBerardino, San Antonio, TX  
Gregory C. Fanelli, Danville, PA  
Aaron J. Krych, MD, Rochester, MN  
Bruce A. Levy, MD, Rochester, MN  
Peter B. MacDonald, MD, Winnipeg, MB, Canada  
Robert G. Marx, MD, New York, NY  
Daniel Whelan, MD, Toronto, ON, Canada  
Rick W. Wright, MD, St. Louis, MO  
This case-based ICL addresses the reasons for failed anterior cruciate ligament (ACL) reconstruction, the preoperative work-up and planning, technical considerations for revision ACL surgery, and the essential ancillary procedures to ensure success.

486  Challenges in the Management of Neuromuscular Hip Disorders in Children and Young Adults  
Moderator: Keith D. Baldwin, MD, Philadelphia, PA  
Henry G. Chambers, MD, San Diego, CA  
Jon R. Davids, MD, Sacramento, CA  
Corinna C. Franklin, MD, Philadelphia, PA  
Andrew G. Georgiadis, MD, Saint Paul, MN  
Pooya Hosseinazadeh, MD, St. Louis, MO  
Robert M. Kay, MD, Los Angeles, CA  
Freeman Miller, MD, Wilmington, DE  
Julieanne P. Sees, DO, Blackwood, NJ  
Benjamin J. Shore, MD, MPH, Boston, MA  
David A. Spiegel, MD, Philadelphia, PA  
This course examines the various controversies in neuromuscular hip displacement and reconstruction in children and young adults.

1:30 PM - 3:30 PM  
Palazzo Ballroom L  
Adult Reconstruction Hip VII (751-765): Imaging of the Hip  
1:30 PM  
Long-Term Results of Total Hip Arthroplasty in Young Patients with Osteonecrosis After Allogeneic Bone Marrow Transplantation: A Multicenter, Propensity-Matched Cohort Study with a Mean 11-Year Follow Up  
Seung Chan Kim, Seoul, Republic of Korea  
Young Wook Lim, MD, Seoul, Republic of Korea  
Se Won Lee, MD, Seoul, Republic of Korea  
Woo Lam Jo, Seoul, Republic of Korea  
Tae Hyeon Kim, Seoul, Republic of Korea  
Yong Sik Kim, MD, Seoul, Republic of Korea  
Soon Yong Kwon, Seoul, Republic of Korea  
Contemporary THA in young patients with ONFH after allogeneic bone marrow transplantation provides a high rate of survivorship and durable long-term outcomes.

1:36 PM  
Instituting a Restrictive Opioid Prescribing Protocol for Primary Total Hip and Knee Arthroplasty: One Institution’s Experience  
Andrew Holte, BS, Coralville, IA  
Christopher N. Carender, MD, Iowa City, IA  
Nicolas O. Noisoux, MD, Iowa City, IA  
Jesse E. Otero, MD, Iowa City, IA  
Timothy Brown, MD, Iowa City, IA  
Drastic reductions in opioid prescriptions following TJA are possible without an increase in refills, phone calls, or adverse clinical effects.

1:42 PM  
Osteonecrosis Risk Imparted by Peroxisome Proliferator-Activated Receptor Gamma Genetic Variance and Pharmacologic Modulation  
Cody Wyles, MD, Rochester, MN  
Christopher Paradise, Rochester, MN  
Matthew T. Houdek, MD, Rochester, MN  
Susan Slager, PhD, Rochester, MN  
Andre J. Van Wijnen, Rochester, MN  
Andre Terzic, MD, Rochester, MN  
Atta Behfar, MD, PhD, Rochester, MN  
Rafael J. Sierra, MD, Rochester, MN  
GWAS and large cohort pharma-co-surveillance demonstrate that osteonecrosis risk is significantly increased by either genetic variance or pharmacologic modulation of the gene PPARG.

1:54 PM  
Patient-Specific Safe Zones Reduce the Rate of Dislocation after Total Hip Arthroplasty  
Jonathan M. Pigorich, MD, New York, NY  
Zlatan Cizmic, MD, Sterling Heights, MI  
Michael P. Bradley, MD, Wakefield, RI  
Michael A. Miranda, MD, Farmington, CT  
David T. Watson, MD, Tampa, FL  
Douglas A. Dennis, MD, Denver, CO  
Stefan Kreuzer, MD, Houston, TX  
Optimal acetabular cup positioning using dynamic imaging sequences effectively reduces the rate of dislocation.
FRIDAY EDUCATIONAL PROGRAMS

2:06 PM  PAPER 756  Hypovitaminosis D in Lower Extremity Joint Arthroplasty: A Systematic Review and Meta-Analysis  
Emmanuel Nageeb, BS, Solon, OH  
Nicolas S. Piuzzi, MD, Shaker Heights, OH  
Jaiben George, MBBS, Cleveland, OH  
Martin Buttaro, MD, Buenos Aires, Argentina  
Carlos A. Higuera Rueda, MD, Weston, FL  

More than half of the patients undergoing hip and knee arthroplasty have low vitamin-D levels.

Discussion

2:18 PM  PAPER 757  Diagnosing Inflammatory Arthritis Periprosthetic Joint Infection: Assumption is the Enemy of Understanding  
Noam Shohat, MD, Petach Tikva, Israel  
Karan Goswami, MD, Philadelphia, PA  
Yale Fillingham, MD, Hanover, NH  
Tyler E. Calkins, BS, Morgantown, WV  
Craig J. Della Valle, MD, Chicago, IL  
Jaiben George, Cleveland, OH  
Carlos A. Higuera Rueda, MD, Weston, FL  
Javad Parvizi, MD, FRCS, Philadelphia, PA  

This study assessed diagnostic accuracy of clinical and laboratory markers for PJI diagnosis in the context of underlying inflammatory arthritis.

Discussion

2:24 PM  PAPER 758  A Neural Network Predicts Discharge Disposition after Primary Total Joint Arthroplasty  
Alexander Greenstein, MD, West Henrietta, NY  
Jack Teitel, BS, MS, Rochester, NY  
David J. Mitten, MD, Rochester, NY  
Benjamin Ricciardi, MD, Rochester, NY  
Thomas G. Myers, MD, Pittsford, NY  

A neural network was developed based on local patient data which accurately predicts discharge disposition of patients undergoing primary total joint arthroplasty.

Discussion

2:30 PM  PAPER 759  Insulin-Dependent Diabetic Patients Undergoing Total Joint Arthroplasty are at Increased Risk of Postoperative Hyperglycemia  
Brian M. Godshaw, MD, New Orleans, LA  
Michael S. Warren, MD, New Orleans, LA  
George F. Chimento, MD, Metairie, LA  
Alaa E. Mohammed, MPH, New Orleans, LA  
Bradford S. Waddell, MD, Greenwich, CT  

Insulin-dependent diabetic patients are at increased risk of postoperative hyperglycemia, thus caution and strict glycemic control should be used to reduce the risk of complications in these patients.

Discussion

2:42 PM  PAPER 760  C-Reactive Protein Misdiagnoses a Large Subset of Patients with Periprosthetic Joint Infection, Especially Caused by Low-Virulent Microorganisms  
Doruk Akgun, Berlin, Germany  
Michael Mueller, MD, Berlin, Germany  
Carsten Perka, MD, Berlin, Germany  
Nora Renz, Berlin, Germany  
Andrej Trampuz, MD, Berlin, Germany  
Tobias Winkler, MD, Berlin, Germany  

CRP alone is not accurate as a screening tool for PJI and may yield high false-negative rates, especially if the causative microorganisms are low-virulent.

Discussion

2:48 PM  PAPER 761  New 5-Factor Modified Frailty Index Predicts Morbidity and Mortality in Primary Total Hip Arthroplasty  
Sophia A. Traven, MD, Charleston, SC  
Russell A. Reeves, MD, Charleston, SC  
Harris Slone, MD, Charleston, SC  
Zeke Walton, MD, Charleston, SC  

The mFI-5 is an independent predictor of postoperative complications including life-threatening medical complications, infections, unplanned readmission, and 30-day mortality following primary THA.

Discussion

2:54 PM  PAPER 762  Prevalence of Generalized Ligamentous Laxity in Patients Undergoing Hip Arthroscopy: A Prospective Study of Patients’ Clinical Presentation, Physical Examination, Intraoperative Findings, and Surgical Procedures  
Ardavan A. Saadat, MD, Chicago, IL  
Ajay Lall, MD, MS, Westmont, IL  
Muriel Battaglia, BA, Westmont, IL  
Mitchell R. Mohr, BS, Westmont, IL  
David R. Maldonado, MD, Elmhurst, IL  
Benjamin G. Domb, MD, Glencoe, IL  

Patients with higher preoperative Beighton scores presented with increased hip range of motion and were found to have smaller labral size and tear dimensions intraoperatively.

Discussion

3:06 PM  PAPER 763  A Precise Method for Determining Acetabular Cup Anteversion After Total Hip Arthroplasty  
Michael Murphy, Downers Grove, IL  
Cameron Killen, MD, Maywood, IL  
Steven Railes, MD, Maywood, IL  
Nicholas M. Brown, MD, Chicago, IL  
Karen Wu, MD, Maywood, IL  

We describe an Area method for radiographs which is the most precise and accurate method for measuring radiographic anteversion of the acetabular component compared when to CT 3D reconstruction.
3:12 PM  PAPER 764
Evaluation of Endoscopic Iliopsoas Tenotomy for Treatment of Iliopsoas Impingement After Total Hip Arthroplasty
Courtney D. Bell, MD, Portland, OR
Paul J. Duwelius, MD, Portland, OR
Lian Wang, MS, Portland, OR
Brooke Beckett, MD, Portland, OR
Hanne A. Gehling, BS, Portland, OR
Mark B. Wagner, MD, Tigard, OR
Evaluation of endoscopic iliopsoas tenotomy for iliopsoas impingement after total hip arthroplasty.

3:18 PM  PAPER 765
Iodine-Supported Titanium Implants have Good Antibacterial Effects for Preventing Periprosthetic Joint Infection
Daisuke Inoue, MD, Kanazawa, Japan
Tamon Kabata, MD, Kanazawa, Japan
Yoshitomo Kajino, MD, Kanazawa, Japan
Yoshitani Junya, Kanazawa City, Japan
Takuro Ueno, MD, Kanazawa, Japan
Ken Ueoka, Kanazawa City, Japan
Toshiharu Shirai, MD, Kyoto, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Iodine-supported implants have demonstrated good antibacterial attachment effects against MRSA, Pseudomonas aeruginosa, MSSE, and fungus. These innovative antibacterial implants may make it possible to prevent PJI.

1:36 PM  PAPER 767
Patterns of Heterotopic Ossification in Fractures About the Elbow
Elizabeth P. Wahl, MD, Durham, NC
Peter M. Casey, MD, Durham, NC
Marc J. Richard, MD, Durham, NC
David S. Ruch, MD, Durham, NC
The pattern of heterotopic ossification development is predictable yet unique for different periarticular elbow fractures.

1:42 PM  PAPER 768
Treatment Methods for Posttraumatic Elbow Stiffness Caused by Heterotopic Ossification
Christina Freibott, BA, New York, NY
Henrik C. Baecher, MD, New York City, NY
Melvin P. Rosenwasser, MD, New York, NY
Botox injection with contracture release is an effective method to treat posttraumatic elbow stiffness secondary to heterotopic ossification.

1:54 PM  PAPER 769
Loss of Pronation/Supination in Patients with Heterotopic Ossification Around the Elbow
Taghi Ramazanian, MD, Rochester, MN
Georgios I. Vasilieridis, MD, PhD, Voula, Greece
Saygin Kamaci, Ankara, Turkey
Daniel R. Bachman, MD, Kansas City, MO
Sangeun Park, Daejeon, Republic of Korea
Sutee Thaveepunsan, MD, Rochester, MN
James S. Fitzsimmons, BSc, Rochester, MN
Shawn W. O’Driscoll, MD, Rochester, MN
From our data, one can expect that 24% of patients with posttraumatic HO of the elbow will have a significant functional loss of pronation-supination due to HO extension into the forearm.

2:00 PM  PAPER 770
A Comparison of Radiofrequency-Based Microtenotomy and Arthroscopic Release of the Extensor Carpi Radialis Brevis Tendon in Recalcitrant Lateral Epicondylitis: A Prospective Randomized Controlled Study
Jae-Hoo Lee, MD, Goyang, Republic of Korea
Sang-Jin Shin, MD, Seoul, Republic of Korea
In Park, Seoul, Republic of Korea
Seungyong Sung, MD, Incheon City, Republic of Korea
Radiofrequency-based microtenotomy is as effective as arthroscopic release to treating recalcitrant lateral epicondylitis with the advantages of the reliable outcomes and shorter operation time.
Friday Educational Programs

2:06 PM
Counterforce Bracing of Lateral Epicondylitis: A Prospective, Randomized, Double Blinded, Placebo Controlled Clinical Trial
Martin Kroslak, MBBS, MS, Kogarah, Australia
Kajan Pirapakaran, Canberra, Australia
George A. Murrell, MD, Kogarah, Australia
Counterforce bracing in acute tennis elbow provides significant improvements in pain relief and function, when compared to placebo bracing, over the short and medium term.

2:18 PM
The Role of Platelet-Rich Plasma Injections vis-a-vis Steroids in Lateral Epicondylitis - Results from a Randomized Trial
Vishesh Khanna, New Delhi, India
Prateek K. Gupta, FRCS (Ortho), MBBS, New Delhi, India
Sirshendu Roy, ACNP-BC, ATC, Hindmotor, India
Ashis Acharya, MS, New Delhi, India
Kamini Khillan, MD, New Delhi, India
Senthil N. Sambandam, MD, Morgantown, WV
This randomized trial supports the use of platelet-rich plasma vis-a-vis steroid injections in tennis elbow. Steady improvements in pain and function can be expected with the former at 3 months.

2:24 PM
Identifying the Safe Zone in Arthroscopic Anterior Elbow Capsulectomy: A Cadaveric Study
Kenneth Chin, MD, Brooklyn Park, MD
Steven A. Horton, MD, Ellicott City, MD
Mohit Gilotra, MD, Baltimore, MD
Lawrence Boone, Baltimore, MD
Syed A. Hasan, MD, Baltimore, MD
We assessed effects of forearm rotation on proximity of the radial nerve and medial collateral ligament to both a proximal and more distal arthroscopic anterior elbow capsulectomy.

2:30 PM
All-Arthroscopic Treatment for the Terrible Triad: Its Proper Indications and Clinical Outcomes
Sung Hyun Lee, MD, Go Yang Si, Republic of Korea
Jeung Woo Kim, MD, Iksan, Republic of Korea
Suchyun Kweon, Iksan, Republic of Korea
Hong Je Kang, MD, Iksan, Republic of Korea
Taekyun Kim, Iksan, Republic of Korea
If the indications are met, all-arthroscopic treatment for the terrible triad can provide satisfactory clinical results without the need for a large incision but with an excellent safety profile.

2:42 PM
Elbow Contractures with Ulnar Neuropathy: Staged Ulnar Nerve Transposition and Arthroscopic Elbow Release Reduces Complications Relative to a Single-Stage Procedure
Gregory J. Della Rocca, MD, PhD, Columbia, MD
James S. Fitzsimmons, BSc, Rochester, MN
Shawn W. O’Driscoll, MD, Rochester, MN
Staged elbow arthroscopic contracture release after ulnar nerve transposition results in fewer postoperative complications than a combined procedure.

2:48 PM
Asymptomatic MRI Findings of the Elbow Predict Injury and Surgery in Major League Baseball Pitchers
Grant Garcia, MD, Mercer Island, WA
Anirudh K. Gowd, Cary, NC
Brandon C. Cabarcas, BS, Hialeah, FL
Joseph Liu, MD, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL
Professional pitching careers result in repetitive microtrauma to the elbow. Specific asymptomatic abnormalities are visible on MRI.

2:54 PM
Direct Comparison of Modified Jobe and Docking Ulnar Collateral Ligament Reconstruction at Mid-Term Follow Up
Justin W. Arner, MD, Pittsburgh, PA
Edward Chang, MD, Washington, DC
Steve Bayer, BA, Pittsburgh, PA
James P. Bradley, MD, Pittsburgh, PA
Both the modified Jobe and docking techniques are suitable surgical options for elbow UCL reconstruction. There was no statistically significant difference between the two techniques.

3:06 PM
The Effect of Humeral and Ulnar Bone Tunnel Placement on Achieving Ulnar Collateral Ligament Graft Isometry: A Cadaveric Study
Ajay Lall, MD, MS, Westmont, IL
David P. Beason, MS, Birmingham, AL
Jeffrey R. Dugas, MD, Birmingham, AL
E. L. Cain, MD, Birmingham, AL
This study demonstrates that UCL graft isometry is dependent upon optimal bone tunnel placement.

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### Paper Presentations 781-795

**3:12 PM**

**Paper 779**

**Revision Total Elbow Arthroplasty Failure Rate by Etiology of Revision**

*Dennis Debernardis, DO, Stratford, NJ*

John G. Horneff, MD, Philadelphia, PA
Zachary Wells, BS, Downingtown, PA
Daniel E. Davis, MD, Wallingford, PA
Matthew L. Ramsey, MD, Philadelphia, PA
Luke S. Austin, MD, Haddonfield, NJ

Primary total elbow arthroplasties revised for infection demonstrate a higher failure rate and shorter time to second revision than TEAs revised for non-infectious etiologies.

**3:18 PM**

**Paper 780**

**Outcomes of Convertible Total Elbow Arthroplasty for Patients with Rheumatoid Arthritis**

*Jason Strelzow, MD, Chicago, IL*

Tym Frank, MD, Toronto, ON, Canada
Kevin Chan, MD, Grand Rapids, MI
Graham J. King, MD, London, ON, Canada

Rheumatoid arthritis of the elbow can be successfully managed with a convertible total elbow arthroplasty. The use of linked and unlinked designs yielded no statistical differences in outcome.

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**1:36 PM**

**Paper 782**

**Early Failure of Allograft Compared to Autograft in Osteochondral Transplantation in the Treatment of Osteochondral Lesions of the Talus: A Cause for Concern**

*Yoshiharu Shimozono, MD, New York, NY*

Eoghan Hurley, MBCHB, Dublin, Ireland
Timothy W. Deyer, MD, New York, NY
John G. Kennedy, MD, New York, NY

Osteochondral autograft transplantation provided significantly better clinical and MRI outcomes than osteochondral allograft transplantation. Allograft procedure had a higher incidence of failure.

**1:42 PM**

**Paper 783**

**Fresh Allograft Replacement for Osteochondral Lesions of the Talus: Is the Allograft Cartilage and Bone Really Better?**

*Samuel B. Adams, MD, Durham, NC*

Nicholas Allen, Roxboro, NC
Fangyu Chen, BA, Durham, NC
James A. Nunley, MD, Durham, NC
Mark E. Easley, MD, Durham, NC

This is the first study to demonstrate that the use of fresh allograft transplantation for the treatment of OLTs replaces the damaged cartilage and bone with normal or near normal cartilage and bone.

**1:54 PM**

**Paper 784**

**Comparison of Functional and Radiographic Outcomes of Talar Osteochondral Lesions Repaired with a Mixture of Particulate Cartilage Extracellular Matrix and Bone Marrow Aspirate Concentrate Versus Microfracture**

*Mark C. Drakos, MD, New York, NY*

Taylor Cabe, BA, New York, NY
Carolyn M. Sofka, MD, New York, NY
Ashraf Fansa, Toledo, OH
Peter D. Fabricant, MD, MPH, New York, NY
Jonathan T. Deland, MD, New York, NY

Using adjuvant particulate cartilage matrix and bone marrow aspirate concentrate appears to improve fill and structural quality of reparative cartilage following microfracture for OLTs.

**2:00 PM**

**Paper 785**

**Predictors of Clinical Outcomes of Autologous Osteochondral Transplantation for Osteochondral Lesions of the Talus**

*Yoshiharu Shimozono, MD, New York, NY*

Johanna Charlotte Emilie Donders, MD, New York, NY
Youichi Yasui, MD, Tokyo, Japan
Eoghan Hurley, MBCHB, Dublin, Ireland
John G. Kennedy, MD, New York, NY

Containment of the lesions and prior microfracture are predictors of outcomes of autologous osteochondral transplantation for the treatment of osteochondral lesions of the talus.
2:06 PM PAPER 786
Comparison of Primary Osteochondral Autograft Transfer System versus Bone Marrow Stimulation for Large Cystic Type Osteochondral Lesion of Talus
Seung Hwan Han, MD, Seoul, Republic of Korea
Kwang Hwan Park, MD, Seoul, Republic of Korea
Jai Bum Kwon, MD, Seoul, Republic of Korea
Jin Woo Lee, MD, Seoul, Republic of Korea
Dongwoo Shim, MD, Seoul, Republic of Korea
Long-term results of primary OATS showed superior clinical improvements to BMS in treating large cystic type OLT of talus.

Discussion

2:18 PM PAPER 787
Is Operative Treatment of Achilles Tendon Ruptures Indicated? A Systematic Review and Meta-Analysis of Randomized Controlled Trials and Observational Studies
Yassine Ochen, Utrecht, Netherlands
Reinier Bekx, Haren, Netherlands
Mark Van Heijl, MD, PhD, Utrecht, Netherlands
Luke Leenen, FAC, MD, Utrecht, Netherlands
Detlef V. Velde, MD, PhD, Almelo, Netherlands
Marilyn Heng, FRCS, MD, Boston, MA
Olivier Van Der Meijden, MD, Vail, CO
Rolf Groenewold, Leiden, Netherlands
Marijn Houwert, MD, PhD, Utrecht, Netherlands
Should acute Achilles tendon ruptures be managed with operative or nonoperative treatment, and could meta-analysis benefit from combining both randomized controlled trials and observational studies?

2:24 PM PAPER 788
Nonoperative Treatment of Achilles Tendinopathy is Successful: A Comparative Analysis of NonInsertional Versus Insertional Tendinopathy Using PROMIS
David Bernstein, MA, MBA, Rochester, NY
Michael R. Anderson, DO, St Paul, MN
Judith F. Baumhauer, MD, MPH, Rochester, NY
Irvin Oh, MD, Pittsford, NY
John P. Ketz, MD, Pittsford, NY
Benedict F. DiGiovanni, MD, Rochester, NY
A trial of nonoperative treatment for achilles tendinopathy has clinical utility and healthcare value when assessed by PROMIS, as 25-46% of patients substantially improve clinically.

Discussion

2:30 PM PAPER 789
Efficacy of Platelet Rich Plasma Injections for Treatment of Chronic Plantar Fasciitis; A Randomized Controlled Study
Biswa Prusty, MS, Bhubaneswar, India
Alok Prusty, MS, Bhubaneswar, India
PRP promotes healing of degenerative lesion with consistent pain relief and can be considered as a safe, effective and reliable method in management of chronic plantar fasciitis.

Discussion

2:42 PM PAPER 790
Anterior Talofibular Ligament Repair with Augmentation of the Inferior Extensor Retinaculum Resulted in Functional and Radiographic Outcomes Comparable to those with Additional Calcaneofibular Ligament Repair for Patients with Chronic Lateral Ankle Instability at Postoperative Three Years
Kyung Rae Ko, Seoul, Republic of Korea
Ki-Sun Sung, MD, PhD, Seoul, Republic of Korea
Daewook Kim, Busan, Republic of Korea
ATFL repair with augmentation of the inferior extensor retinaculum resulted in surgical outcomes that were comparable to those with additional CFL repair in a prospective, randomized controlled trial.

2:48 PM PAPER 791
Serial Changes in Ankle Muscle Strength during the Two Years after the Modified Broström Procedure
Kyung Rae Ko, Seoul, Republic of Korea
Ki-Sun Sung, MD, PhD, Seoul, Republic of Korea
Daewook Kim, Busan, Republic of Korea
There was no evidence of further restoration during the second year. The restoration level was 85.4–93.7% of the contralateral side with various indicators at postoperative 1–2 years.

2:54 PM PAPER 792
Is Revision Anatomic Ankle Ligament Repair Augmented with Suture-Tape a Viable Alternative for Patients with Failed Broström Procedure?
Byung-Ki Cho, MD, Cheong, Republic of Korea
Minyong An, Cheongju, Republic of Korea
The revision MBP augmented with suture-tape is an effective treatment method for recurrent ankle instability in patients with prior failed MBP. This combined procedure can provide reliable stability and satisfactory clinical outcomes through supplementation of the anatomic repair of attenuated ligaments using suture-tape.

Discussion

3:06 PM PAPER 793
Conventional Ankle Sprain Treatment is Associated with Alarmingly High Rates of Persistent Opioid Use
Fred Finney, MD, Ann Arbor, MI
Timothy Gossett, MD, Ann Arbor, MI
Jennifer F. Waljee, MD, Ann Arbor, MI
Chad M. Brummett, MD, Ann Arbor, MI
David M. Walton, MD, Dexter, MI
Paul Talusan, MD, Ann Arbor, MI
James R. Holmes, MD, Ann Arbor, MI
An alarming number of patients who sustain an ankle sprain are inappropriately treated with an opioid medication, and 9.3% of these patients continue opioid use after three months.

Discussion

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
3:12 PM
Postoperative Pain Management After Foot and Ankle Surgery Without and With Gabapentin: A Prospective Investigation
Jamal Ahmad, MD, Evanston, IL
Using gabapentin for adjuvant analgesia after orthopaedic foot and ankle surgery provides acute pain relief that is significantly better than opiate pain medication alone.

3:18 PM
A Prospective Randomized Study Evaluating the Effect of Perioperative NSAIDs on Opioid Consumption and Pain Management After Ankle Fracture Surgery
Brian Winters, MD, Linwood, NJ
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Joseph N. Daniel, DO, Stratford, NJ
Rachel Shakaked, MD, Media, PA
Kristen Nicholson, PhD, Philadelphia, PA
Steven M. Raikin, MD, Philadelphia, PA
David I. Pedowitz, MD, MS, Villanova, PA
The addition of ketorolac to the postoperative drug regimen significantly reduced pain, while decreasing the use of opioid medication following ORIF of ankle fractures in the postoperative period.

1:30 PM
Preoperatively Placed Fascia Iliaca Blocks Reduce Both Pre- and Postoperative Opioid Intake in Geriatric Hip Fracture Patients
John Garlich, MD, Los Angeles, CA
Eytan Debbi, MD, PhD, Los Angeles, CA
Dheeraj Yalamanchili, MD, Los Angeles, CA
Samuel Stephenson, MD, PhD, Beverly Hills, CA
Stephen Stephan, MD, West Hollywood, CA
Ali Noorzad, MD, Los Angeles, CA
Landon Polakof, MD, Los Angeles, CA
Milton T. Little, MD, Los Angeles, CA
Carol Lin, MD, MA, Los Angeles, CA
Geriatric hip fracture patients receiving a preoperative fascia iliaca block take less opioid medications in the preoperative and postoperative periods.

1:36 PM
The Routine Use of Antibiotic-Laden Bone Cement in Primary Total Knee Arthroplasty Does Not Reduce Infection Risk and is Not Cost-Effective in Non-Diabetic Patients
Robert S. Namba, MD, Corona Del Mar, CA
Matthew P. Kelly, MD, Harbor City, CA
Adrian D. Hinman, MD, San Leandro, CA
Ronald W. Wyatt, MD, Walnut Creek, CA
Liz Paxton, MA, Rcho Santa Fe, CA
Eric L. Cain, MD, Oakland, CA
Guy Cafri, PhD, San Diego, CA
The routine use of antibiotic bone cement does not reduce TKA infection risk and is not cost effective in non-diabetic patients.

1:42 PM
Complications Following Total Hip Arthroplasty for Osteoarthritis Versus Hip Fracture
Ryan Charette, MD, Philadelphia, PA
Matthew Sloan, MD, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA
This is a large database study looking at perioperative complications of total hip arthroplasty done for osteoarthritis versus femoral neck fracture.

1:54 PM
Baseline Characteristics and Two-Year Outcomes of Patients With and Without Maladaptive Psychopathological Traits Undergoing Shoulder Stabilization Surgery
Kyle Duchman, MD, Iowa City, IA
Brian R. Wolf, MD, Iowa City, IA
Natalie A. Glass, PhD, Iowa City, IA
Julie Y. Bishop, MD, Columbus, OH
Keith M. Baumgarten, MD, Sioux Falls, SD
Carolyn Hettrich, MD, MPH, Lexington, KY
Patients with shoulder instability and maladaptive psychopathological traits have decreased patient reported outcomes at baseline and two years following shoulder stabilization surgery.

2:00 PM
Evaluating Factors Associated with Scaphoid Nonunion Following Open Reduction and Internal Fixation
Pooja Prabhakar, Dallas, TX
Lauren E. Wessel, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Michelle G. Carlson, MD, New York, NY
Duretti Fufa, MD, New York, NY
This case control study demonstrates that time to surgery and fracture fragment size are significant factors that may affect scaphoid healing after operative management.
Conventional Ankle Sprain Treatment is Associated with Alarmingly High Rates of Persistent Opioid Use

Fred Finney, MD, Ann Arbor, MI
Timothy Gossett, MD, Ann Arbor, MI
Jennifer F. Wajjje, MD, Ann Arbor, MI
Chad M. Brummett, MD, Ann Arbor, MI
David M. Walton, MD, Dexter, MI
Paul Talusan, MD, Ann Arbor, MI
James R. Holmes, MD, Ann Arbor, MI

An alarming number of patients who sustain an ankle sprain are inappropriately treated with an opioid medication, and 9.3% of these patients continue opioid use after three months.

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

I. Posterior Tibial Tendon Dysfunction: Restoring the Flatfoot
    Scott Ellis, MD, New York, NY

II. Tendons: Why Do They Fail? The pathophysiology of Tendon Function
    Jeremy J. McCormick, MD, Chesterfield, MO

III. Achilles Tendon Disorders: Sorting Through PRP, Percutaneous vs. Open Repair, and Chronic Ruptures, Evidence Based Medicine
    Anand M. Vora, MD, Lake Forest, IL

Utilizing audience response and video, the faculty demonstrates revision total hip arthroplasty techniques stressing planning and exposure, reconstruction of bone loss, and treating dislocations.

Introduction to the start of art technology in total knee replacement: what is out there and how to use it safely.
**463** Hip Preservation: What Every Orthopaedic Provider Needs to Know

*Moderator: Paul E. Beaule, MD, Ottawa, ON, Canada*

*Asheesh Bedi, MD, Ann Arbor, MI*

*John C. Clohisy, MD, St. Louis, MO*

*Ira Zaltz, MD, Royal Oak, MI*

Understand up-to-date clinical and radiological evaluation of non-arthritic hip pain, differential diagnosis, and indication for arthroscopic, open surgical and hip replacement surgery.

**464** Pediatric On Call Challenges for the General Orthopaedic Surgeon

*Moderator: Martin J. Morrison, MD, Redlands, CA*

*Keith D. Baldwin, MD, Philadelphia, PA*

*Brian P. Scannell, MD, Charlotte, NC*

*Christopher D. Souder, MD, Austin, TX*

This ICL is directed at the General Orthopaedic Surgeon to provide hints on how to deal with call challenges when taking Pediatric Orthopaedic call.


*Moderator: Mark A. Mighell, MD, Tampa, FL*

*Akin Cil, MD, Kansas City, MO*

*Joaquin Sanchez-Sotelo, MD, Rochester, MN*

*Matthew Willis, MD, Brentwood, TN*

Surgical management of complex three- and four-part proximal humerus fractures has improved with new technologies such as locked plates and the reverse shoulder arthroplasty. The goal is to better understand when to hold ‘em (fix), when to fold ‘em (arthroplasty), and when to walk away (nonoperative management). The course focuses on technical tips to assist in each surgical option together with expert opinion and literature review.

**466** Posterior Cruciate Ligament Surgery: The Step-by-Step Road to Success

*Moderator: Gonzalo Samitier Solis, MD, Madrid, Spain*

*Ramon B. Cugat, MD, Barcelona, Spain*

*Robert F. LaPrade, MD, PhD, Chanhasen, MN*

*Bruce A. Levy, MD, Rochester, MN*

Surgical Skills Video-Based ICL about Posterior Cruciate Ligament (PCL) reconstruction and difficult related knee situations including all the therapeutic steps to treat successfully this common pathology will special focus to surgical technique.

**467** Distal Humerus Fractures: Surgical Techniques

*Moderator: Utku Kandemir, MD, San Francisco, CA*

*Animesh Agarwal, MD, San Antonio, TX*

*Michael D. McKee, MD, FRCS, Phoenix, AZ*

*Milan K. Sen, MD, Bronx, NY*

Knowledge of advantages and disadvantages of each surgical approach for distal humerus fractures, reduction techniques, and ulnar nerve management is of paramount importance in deciding the approach in each individual case.

**468** When and How to Use Arthroplasty in Acute and Failed Hip Fracture Treatment: The Latest Surgical Techniques

*Moderator: Richard F. Kyle, MD, Minneapolis, MN*

*Paul J. Duwelius, MD, Portland, OR*

*George J. Haidukewych, MD, Orlando, FL*

*Andrew H. Schmidt, MD, Minneapolis, MN*

This ICL reviews the incidence of hip fractures worldwide, morbidity, and cost. The importance of treatment selection for correct treatment (internal fixation versus arthroplasty) techniques of arthroplasty (hemi versus total hip arthroplasty) in acute fractures and failed open reduction and internal fixation of hip fractures are covered.

**4750RS** Fracture Healing and Patient Care: Impact of Inflammation and Aging

*Moderator: Gloria L. Matthews, DVM, PhD, Marietta, GA*

*Stuart B. Goodman, MD, PhD, Redwood City, CA*

*Amy L. Ladd, MD, Redwood City, CA*

*Eric G. Meinberg, MD, San Francisco, CA*

*Roman Natoli, MD, Indianapolis, IN*

*Regis J. O’Keefe, MD, St. Louis, MO*

The influence of inflammation and aging on fracture healing is discussed with the aim of translating knowledge of this complex pathobiology to effective healing augments.

**487** The Personalized Approach to the Isolated Arthritic Knee: From Biologics to Metal – Drop that Total Knee Arthroplasty Tray

*Moderator: Khaled J. Saleh, FRCSC, MD, Northville, MI*

*Elizabeth A. Arendt, MD, Minneapolis, MN*

*Richard A. Berger, MD, PhD, Rochester, MN*

*Mathias P. G. Bostrom, MD, New York, NY*

*John J. Callaghan, MD, Iowa City, IA*

*Brian J. Cole, MD, Chicago, IL*

*Christopher L. Cooke, MD, Bloomfield Hills, MI*

*Quanjun Cui, MD, Charlottesville, VA*

*Jack Farr II, MD, Greenwood, IN*

*Todd J. Frush, MD, West Bloomfield, MI*

*John P. G. Fulkerson, MD, Farmington, CT*

*Henry T. Goitz, MD, St. Clair Shores, MI*

*Sam Hakki, MD, Clinton Twp, MI*

*Robert F. LaPrade, MD, PhD, Avon, CO*

*Adolph V. Lombardi, Jr, MD, New Albany, OH*

*Mark D. Mackey, MD, Commerce Twp, MI*

*William M. Mihalko, MD, PhD, Germantown, TN*

*Mark D. Miller, MD, Charlottesville, VA*

*Anthony Miniaci, MD, FRCSC, Garfield Hts, OH*

*David W. Murray, MD, Oxford, United Kingdom*

*David P. Patterson, MD, Ann Arbor, MI*

*Herrick Siegel, MD, Birmingham, AL*

*Charles J. Taunt Jr., DO, Lansing, MI*

This course provides management paradigms of the isolated compartment arthritic knee and delineates application of technical strategies and approaches to prevent and treat this condition.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Fractures of the Proximal Femur: A Case-Based Approach
Moderator: Kenneth A. Egol, MD, New York, NY
Lisa K. Cannada, MD, Jacksonville, FL
Roy Davidowitz, MD, New York, NY
Jonathan M. Gross, MD, Brooklyn, NY
Joseph R. Hsu, MD, Charlotte, NC
Kyle J. Jeray, MD, Greenville, SC
Mhady A. Karunakar, MD, Charlotte, NC
Sanjit R. Konda, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Saqib Rehman, MD, Moorestown, NJ
Philip R. Wolinsky, MD, Sacramento, CA

This course focuses on the management of femoral neck and peripheoachete fracture. Attention is given to surgical tips and tricks.

Paper Presentations 796-810

4:00 PM - 6:00 PM
Palazzo Ballroom E

Adult Reconstruction Hip VIII (796-810): Revision THR
Moderators: Ben M. Stronach, MD, Jackson, MS and Nicolas O. Noisieux, MD, Iowa City, IA

4:00 PM
Extensive Proximal Femoral Bone Loss - Are Modular Fluted Femoral Stems the Answer?
Jesse E. Otero, MD, Iowa City, IA
John R. Martin, MD, Weddington, NC
Susan M. Odum, PhD, Charlotte, NC
J. Bohannon Mason, MD, Charlotte, NC

Modular tapered-fluted femoral stems used for femoral revision in the setting of extensive proximal femoral bone loss show excellent survival at minimum 2-year follow up.

4:06 PM
Capsular Closure Outweighs Head Size in Preventing Dislocation Following Revision Total Hip Arthroplasty
Christopher Pedneault, MD, Montreal, QC, Canada
Michael Tanzer, MD, Montreal, QC, Canada

Larger diameter heads may help in certain cases, but capsular closure outweighs the effect of femoral head diameter in preventing dislocation following revision THA through a posterolateral approach.

4:12 PM
Revision of Large head Metal-on-Metal Total Hip Arthroplasty: An Algorithm to Reduce Complications
Moataz El-Husseiny, Stanmore, United Kingdom
Bassam A. Masri, MD, FRSCC, Vancouver, BC, Canada
Clive P. Duncan, MD, MSc, Vancouver, BC, Canada
Donald S. Garbus, MD, MHSc, Vancouver, BC, Canada

The purpose of the present study is to compare the new surgical protocol above to our previously reported early complications in this group of patients.

4:24 PM
Emergency Department Visit Within One Year Prior to Elective Total Hip Arthroplasty is Predictive of Postoperative Return to Emergency Department Within 90 Days
Michael D. Gabbard, MD, Ferndale, MI
Michael A. Charters, MD, Northville, MI
Sean P. Mahoney, BS, Detroit, MI
Wayne T. North, MD, Grosse Pointe Woods, MI

Presentation to the ED is common prior to THA and predictive of postoperative ED visit within 90 days. Preoperative visit frequency and proximity further increase patients' risk.

4:30 PM
Conversion of Hip Resurfacing with Retention of Monoblock Acetabular Shell Using Dual Mobility Components
Jason L. Blevins, MD, New York, NY
Tony S. Shen, MD, New York, NY
Rachelle Morgenstern, New York, NY
Edwin P. Su, MD, New York, NY

Conversion of hip resurfacing femoral component with retention of a well fixed monoblock acetabular shell using dual mobility components is a reasonable bone preserving revision.

4:36 PM
Predictors of Infection Free Survival After Irrigation and Debridement of Revision Total Hip Arthroplasty
Nicholas C. Bene, Medford, MA
Xing Li, BS, West Lebanon, NH
Sumon Nandi, MD, Toledo, OH

Intraoperative frozen section predicts risk of reoperation for infection following I&D with liner exchange of revision THA. Chronic antibiotic suppression should be considered in all patients after I&D with liner exchange of revision THA.

4:48 PM
Multicenter Evaluation of a Modular Dual Mobility Construct for Revision Total Hip Arthroplasty
Ronald Huang, MD, New York, NY
Arthur L. Malkani, MD, Louisville, KY
Michael A. Mont, MD, New York, NY
William J. Hozack, MD, Philadelphia, PA
Steven F. Harwin, MD, New York, NY
Geoffrey H. Westrich, MD, New York, NY

At latest follow up, revision THA with the MDM construct provided a very low rate of instability for a revision cohort, namely 2.9%, with good functional improvement and a low rate of reoperation.

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
FRIDAY EDUCATIONAL PROGRAMS

4:54 PM  PAPER 803
Mortality During Total Hip Periprosthetic Joint Infection: A Meta-Analysis
Zachary Lum, DO, Sacramento, CA
Kyle Natsuhara, MD, Sacramento, CA
Trevor J. Shelton, MD, Sacramento, CA
John P. Meehan, MD, Sacramento, CA

The mortality rate after two stage total hip revision for infection is unfortunately very high. When counseling a patient regarding complications of this disease, death should be discussed.

5:00 PM  PAPER 804
Modern Dual-Mobility Cups in Revision Total Hip Arthroplasty: A Systematic Review and Meta-Analysis
Jay M. Levin, BA, Newport Coast, CA
Assem Sultan, MD, Cleveland, OH
Jeffrey A. O’Donnell, BS, Williamsville, NY
Linsen T. Samuel, MBA, MD, Floral Park, NY
Anton Khlopas, MD, Elmwood Park, IL
Nicolas S. Pizzu, MD, Shaker Heights, OH
Michael A. Mont, MD, New York, NY

DM cups have demonstrated excellent survivorship, low dislocation, and overall complication rates. It can be considered a safe and effective option in high-risk patients who require revision THA.

5:12 PM  PAPER 805
Do Collared Stems in Total Hip Arthroplasty Resist Periprosthetic Fracture? A Biomechanical Study
Shivam Desai, MD, Baltimore, MD
Aaron J. Johnson, MD, Glen Burnie, MD
Chunyang Zhang, MD, Baltimore, MD
Li-Qun Zhang, PhD, Chicago, IL
Kyung Koh, PhD, Baltimore, MD
Dali Xu, PhD, Chicago, IL
Robert V. O’Toole, MD, Lutherville, MD
Theodore T. Manson, MD, Bel Air, MD

Collared stems in total hip arthroplasty resist periprosthetic fractures better than collarless stems in a biomechanical model suggesting a protective effect against early fractures.

5:18 PM  PAPER 806
Intraoperative Femoral Fractures during Primary Total Hip Replacement Significantly Increase the Probability of Postoperative Revision Surgery and Mortality: A Matched Survival Analysis from the National Joint Registry for England and Wales
Jonathan N. Lamb, MBBS, Leeds, United Kingdom
Ben Van Duren, Leeds, United Kingdom
Guilaj Matharu, MBCHB, Worcs, United Kingdom
George S. Whitwell, FRCS (Ortho), MBCHB, Leeds, United Kingdom
Anthony Redmond, PhD, Leeds, UK, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom

A propensity matched analysis of outcomes in 4,940 patients who sustained intraoperative periprosthetic femoral fractures during primary total hip replacement.

5:24 PM  PAPER 807
Impaction Bone Grafting or Uncemented Modular Stems for the Treatment of Type B3 Vancouver Periprosthetic Fractures? A Complication Rate Analysis
Fernando Díaz Dílerma, MD, Buenos Aires, Argentina
Pablo A. Slullitel, MD, Buenos Aires, Argentina
Santiago Mc Loughlin, Caba, Argentina
Gerardo Zanotti, Buenos Aires, Argentina
Fernando M. Comba, Buenos Aires, Argentina
Francisco Picaluga, MD, Buenos Aires, Argentina
Martin Buttaro, MD, Buenos Aires, Argentina

We compare the impaction bone grafting technique against the use of uncemented modular stems for the treatment of type B3 Vancouver periprosthetic fractures, performing a complication rate analysis.

5:36 PM  PAPER 808
Reliability and Validity of the Vancouver Classification in Uncemented Periprosthetic Hip Fractures
Shanjean Lee, MD, Portland, OR
Lian Wang, MS, Portland, OR
Yee-Cheen Doung, MD, Portland, OR

The interobserver reliability and validity of the Vancouver classification for uncemented THA is lower than previously described in cemented THAs.

5:42 PM  PAPER 809
What is the Dislocation Rate when the Anterior Approach is Used for Isolated Head and Liner Exchange?
Ryan Robertson, MD, Alexandria, VA
Robert Hopper, PhD, Alexandria, VA
William G. Hamilton, MD, Alexandria, VA

The anterior approach can be used for head and liner exchanges in revision THA, but a dislocation rate of 19% was observed in this cohort of patients.

5:48 PM  PAPER 810
Extended Perioperative Antibiotic Prophylaxis Confers no Additional Benefit Following Aseptic Revision Total Hip Arthroplasty
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Arash Aalirezaie, MD, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Kier Blevins, BA, Conestoga, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study examined whether extended antibiotic prophylaxis following aseptic revision total hip arthroplasty (THA) reduces the risk of subsequent periprosthetic joint infection (PJI).
PAPER PRESENTATIONS 811-825

4:00 PM - 6:00 PM

Friday Ballroom L

Adult Reconstruction Knee IX (811-825): Perioperative Management for TKA
Moderators: Andrew M. Star, MD, Ambler, PA and Neil P. Sheth, MD, Philadelphia, PA

4:00 PM  

**PAPER 811**

Hepatitis C may be a modifiable risk factor in Total Joint Arthroplasty: Preoperative treatment of Hepatitis C is associated with lower prosthetic joint infection in US Veterans
Ilya Bendich, MD, San Francisco, CA
Steven Takemoto, PhD, San Francisco, CA
Joseph Patterson, MD, San Francisco, CA
Alexander Monto, San Francisco, CA
Thomas C. Barber, MD, San Francisco, CA
Alfred C. Kuo, MD, San Francisco, CA

This is a large database study demonstrating preoperative treatment of Hepatitis C in TJA leads to lower postoperative complication rates. The findings suggest Hepatitis C is a modifiable risk factor.

4:06 PM  

**PAPER 812**

Incidence of Positive Chest CT for Pulmonary Embolism with a Negative Duplex Ultrasound for Deep Vein Thrombosis Following Lower Extremity Total Joint Arthroplasty
Kevin Pirruccio, BA, Philadelphia, PA
Matthew Winterton, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA

There is a high incidence of positive CT scans for PE with a negative US for DVT in the perioperative period following a lower extremity TJA, potentially due to high CT imaging sensitivity.

4:12 PM  

**PAPER 813**

Patient Preference Predicts Discharge Disposition after Total Joint Arthroplasty
Jonathan P. Edgington, MD, Chicago, IL
Robert J. Avino, MD, Chicago, IL
Richard L. Wixson, MD, Skokie, IL
Alex Tauchen, MD, Lincolnshire, IL
Lalit Puri, MD, Skokie, IL

Patients with RAPT score >10 may prefer to go to SNF due to the perception that SNF will provide improved physical therapy.

4:24 PM  

**PAPER 814**

Home Exercises vs. Outpatient Physical Therapy after Total Knee Arthroplasty: Value and Outcomes following a Protocol Change
Alexander Rondon, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
William Wang, MD, Philadelphia, PA
John A. Wilsman, BA, Philadelphia, PA
James J. Purtill, MD, Philadelphia, PA

Comparable outcomes demonstrated between patients with and without outpatient physical therapy in the first 2 weeks postoperatively with at minimum $1,340.87 cost reduction per patient per 90-days.

4:30 PM  

**PAPER 815**

Sleep Apnea, A Risk Factor for Medical and Implant Related Complications Following Primary Total Knee Arthroplasty
Wayne Cohen-Levy, BA, MD, Miami, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Augustus Rush, MD, Miami, FL
Tsun Yee Law, MD, Fort Lauderdale, FL
Victor H. Hernandez, MD, MS, Miami, FL
Martin W. Roche, MD, Fort Lauderdale, FL

With the increasing prevalence of sleep apnea patients undergoing total knee arthroplasty, the study illustrates complications an orthopaedic surgeon may encounter in their practice.

4:36 PM  

**PAPER 816**

Nutritional Counseling Protocol in Obese Patients Enables Weight Optimization for Safe Total Joint Arthroplasty
Danielle Y. Ponzo, MD, Longport, NJ
Alvin C. Ong, MD, Linwood, NJ
Benjamin A. Fink, BS, Egg Harbor Township, NJ
Carla Beck, MS, Egg Harbor Township, NJ
Andres F. Duque, MD, MSc, Egg Harbor Township, NJ
Zachary D. Post, MD, Egg Harbor Township, NJ
Fabio Orozco, MD, Margate City, NJ

Surgeons must actively counsel obese patients on weight optimization. Nutritional counseling with a dietitian and follow up with the surgeon translated to successful TJA in a majority of patients.

4:48 PM  

**PAPER 817**

Effectiveness of an Automated Digital Patient Engagement Platform on 30-Day Emergency Department Visit Rates following Hip and Knee Arthroplasty
Benjamin Rosner, MD, PhD, Mountain View, CA
Ron Li, MD, Mountain View, CA
Susan Chao, PhD, Mountain View, CA

Automated digital patient engagement platforms appear to be associated with significant reductions in 30-day ED visit rates among Maryland TJR patients compared to a Maryland HCUP regional benchmark.

4:54 PM  

**PAPER 818**

Discharge Disposition After Arthroplasty: Location, Location, Location ...
Jose C. Alcerro, MD, Coral Gables, FL
Carlos J. Lavernia, MD, Coral Gables, FL

Clinical intuition and experience proved to be the best predictor for discharge disposition. Worse outcomes were observed in patients being discharged to rehab.
5:00 PM

**PAPER 819**

**Patent Foramen Ovale is Independently Associated with Cerebrovascular Accident After Total Knee Arthroplasty**

Sean P. Ryan, MD, Durham, NC  
Cary S. Politzer, BS, Durham, NC  
**Cierra S. Hong, BA, Durham, NC**  
Michael A. Bergen, BS, Durham, NC  
Michael P. Bolognesi, MD, Durham, NC  
Thorsten M. Seyler, MD, PhD, Durham, NC

Patients with patent foramen oval are at significantly greater risk of ischemic stroke following total knee arthroplasty.

**Discussion**

5:12 PM

**PAPER 820**

**Albumin, Prealbumin, and Transferrin May Be Predictive of Wound Complications Following Total Knee Arthroplasty**

Jennifer Kurowicki, MD, Jersey City, NJ  
Martin W. Roche, MD, Fort Lauderdale, FL  
Tsun Yee Law, MD, Fort Lauderdale, FL  
Nipun Sodhi, BA, Cleveland, OH  
Samuel Rosas, MD, Winston-Salem, NC  
Assem Sultan, MD, Cleveland, OH  
Spencer Summers, MD, Miami, FL  
Karim G. Sabeih, MD, Miami, FL  
Michael A. Mont, MD, New York, NY

Preoperative albumin, prealbumin, and transferrin values falling below the normal range represented an increased risk for postoperative complications.

5:18 PM

**PAPER 821**

**Complications Following Total Hip and Knee Arthroplasty in Patients with Prior History of Malignancy**

Matthew Sloan, MD, Philadelphia, PA  
Neil P. Sheth, MD, Philadelphia, PA  
Gwo-Chin Lee, MD, Philadelphia, PA

Large national database study evaluating the risk for preoperative complications following primary total joint arthroplasty among patients with a known diagnosis of disseminated malignancy.

5:24 PM

**PAPER 822**

**The Effects of Preoperative Antiplatelets and Anticoagulants on Total Joint Arthroplasty Outcomes**

Gonzalo E. Sumarriva, MD, Knoxville, TN  
Alexander H. Habashy, MD, New Orleans, LA  
**Tara A. Saxena, BA, MBBS, Palo Alto, CA**  
George F. Chimento, MD, Metairie, LA

Our study aims to determine whether or not patients on anticoagulation and/or antiplatelet therapy 90 days prior to surgery had an increased risk of complications within a 30 day postoperative period.

**Discussion**

5:36 PM

**PAPER 823**

**Fibromyalgia is Associated with Increased Surgical Complications following Total Knee Arthroplasty: A Nationwide Database Study**

Tara Moore, BA, MSc, New York, NY  
**Nipun Sodhi, BA, Cleveland, OH**  
Rushabh Vakharia, MD, Fort Lauderdale, FL  
Kristina Dushaj, MA, New York, NY  
Paraskevi (vivian) Papas, BS, Whitestone, NY  
Assem Sultan, MD, Cleveland, OH  
Tsun Yee Law, MD, Fort Lauderdale, FL  
Martin W. Roche, MD, Fort Lauderdale, FL  
Michael A. Mont, MD, New York, NY

Orthopaedic surgeons must carefully evaluate the use of surgical intervention when treating fibromyalgia patients.

5:42 PM

**PAPER 824**

**Total Knee Arthroplasty in Patients with Lymphedema: A Matched Cohort Study**

Joshua M. Kolz, MD, MS, Rochester, MN  
William G. Rainer, MD, Rochester, MN  
Cody Wyles, MD, Rochester, MN  
Matthew T. Houdek, MD, Rochester, MN  
Kevin I. Perry, MD, Rochester, MN  
David G. Lewallen, MD, Rochester, MN

A retrospective matched cohort study showed patients with a preoperative diagnosis of lymphedema are at significantly increased risk of revision, reoperation, and infection following primary TKA.

5:48 PM

**PAPER 825**

**Is 30-day Readmission Rate after Total Joint Replacement Affected by Where Preoperative Medical Clearance is Performed?**

Robert J. Avino, MD, Chicago, IL  
Caroline Wlodarski, Naperville, IL  
Alex Tauchen, MD, Lincolnshire, IL  
Lalit Puri, MD, Skokie, IL

Patients who had their preoperative medical clearance performed by an in-network PCP were 67% less likely to be readmitted following surgery.
Friday Educational Programs

Paper Presentations 826-840

4:00 PM - 6:00 PM
Room 4401

Shoulder and Elbow VIII (826-840): Anatomic Shoulder Arthroplasty
Moderators: Ryan T. Bicknell, MD, Kingston, ON, Canada and Wesley P. Phipatanakul, MD, Loma Linda, CA

4:00 PM  PAPER 826
Three-Dimensional Computed Tomography Analysis of Glenoid Component Shift and Osteolysis Following Total Shoulder Arthroplasty
Eric T. Ricchetti, MD, Cleveland, OH
Bong-Jae Jun, PhD, Cleveland, OH
Jason Ho, MD, Cleveland, OH
Thomas E. Patterson, PhD, Cleveland, OH
Kathleen Derwin, PhD, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Postoperative 3D CT imaging analysis demonstrates that glenoid component shift commonly occurs following total shoulder arthroplasty without consistently being associated with component osteolysis.

4:06 PM  PAPER 827
Posterior Augmented Glenoids Compared to Non-Augmented Glenoids in Anatomic Total Shoulder Arthroplasty
Richard J. Friedman, MD, Charleston, SC
Sean G. Grey, MD, Fort Collins, CO
Thomas W. Wright, MD, Gainesville, FL
Pierre-Henri Flurin, MD, Merignac, France
Joseph D. Zuckerman, MD, New York City, NY
Christopher Roche, MS, MBA, Gainesville, FL

At a mean follow up > 3 years, posterior augmented glenoid patients had significantly better clinical outcomes compared to a matched cohort of cemented peg glenoids, with no recurrent subluxations.

4:12 PM  PAPER 828
The Recovery Curve of Anatomic Total Shoulder Arthroplasty for Primary Glenohumeral Osteoarthritis: Mid-Term Results at a Minimum of Five Years
Burak Altintas, MD, Vail, CO
Marilee P. Horan, MPH, Vail, CO
Grant Dorman, MSc, Vail, CO
Jonas Pogorzelski, MBA, MD, Munich, Germany
Zaamin Hussain, BA, Vail, CO
Jonathan A. Godin, MD, Roanoke, VA
Peter J. Millett, MD, MSc, Vail, CO

This study demonstrates that patients undergoing primary anatomic TSA may expect excellent outcomes following this procedure for a minimum of five years postoperatively regardless of their age and sex.

4:24 PM  PAPER 829
Underweight Patients are the Greatest Risk Body Mass Index Group for Perioperative Adverse Events Following Total Shoulder Arthroplasty
Taylor Ottesen, BS, New Haven, CT
Walter Hsiang, BS, New Haven, CT
Rohil Malpani, BS, New Haven, CT
Arya G. Varthi, MD, New Haven, CT
Lee E. Rubin, MD, New Haven, CT
Jonathan N. Grauer, MD, New Haven, CT

Underweight patients have higher rates of adverse events and postoperative infection than any other BMI category. Additional consideration/surgical planning should be given to these fragile patients.

4:30 PM  PAPER 830
What are the Costs of Shoulder Osteoarthritis in the Year Prior to a Total Shoulder Arthroplasty?
Azeem T. Malik, MBBS, Columbus, OH
Julie Y. Bishop, MD, Columbus, OH
Andrew S. Neviaser, MD, New Albany, OH
Nikhil Jain, MBBS, MD, Columbus, OH
Safdar N. Khan, MD, Columbus, OH

A high utilization of glenohumeral OA-related care was observed in the last three months prior to a TSA. Judicious use of conservative treatment will be an effective way in reducing healthcare burden.

4:36 PM  PAPER 831
Hematoma Following Total Shoulder Arthroplasty: Incidence, Management, and Outcomes
Benjamin Hendy, MD, Philadelphia, PA
Benjamin Zmistowski, MD, Philadelphia, PA
Mihir M. Sheth, BS, Plainsboro, NJ
Joseph A. Abboud, MD, Philadelphia, PA
Gerald R. Williams, MD, Philadelphia, PA
Surena Namdari, MD, MSc, Philadelphia, PA

Most postoperative hematomas following shoulder arthroplasty can be managed without operative intervention, however, there is a strong association between hematoma and the development of PJ.

4:48 PM  PAPER 832
Therapeutic Postoperative Anticoagulation is a Risk Factor for Wound Complications, Infection, and Revision after Shoulder Arthroplasty
Jourdan M. Cancienne, MD, Charlottesville, VA
Dean Wang, MD, New York, NY
Christopher L. Camp, MD, Rochester, MN
Ryan Degen, FRCSC, MD, London, ON, Canada
Brian C. Werner, MD, Charlottesville, VA

Bleeding-related complications in patients undergoing total shoulder arthroplasty who require postoperative therapeutic anticoagulation are significant.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
The Effect of Mental Health on Outcomes after Shoulder Arthroplasty
Stephanie E. Wong, MD, San Francisco, CA
Alexis Colley, MS, San Francisco, CA
Austin Pitcher, MD, San Francisco, CA
Alan Zhang, MD, San Francisco, CA
ChunBong B. Ma, MD, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA

A psychiatric diagnosis is not predictive of shoulder arthroplasty outcomes. Shoulder arthroplasty is associated with improved mental health scores in those with mental health disorders.

Bundled Payment Plans Produce Significant Cost Savings for Total Shoulder Arthroplasty in the Outpatient Setting
Jordan D. Walters, MD, Memphis, TN
Ryan Walsh, Memphis, TN
Richard A. Smith, PhD, Memphis, TN
Tyler J. Brolin, MD, Collierville, TN
Frederick M. Azar, MD, Memphis, TN
Thomas (Quin) W. Throckmorton, MD, Germantown, TN

A cost minimization comparison of bundled and unbundled service payment plans was performed at an outpatient surgery center for anatomic shoulder arthroplasty showed that bundling can reduce costs.

Total Shoulder Arthroplasty is Safe and Effective in the Outpatient Setting
Joseph Messana, MD, Rensselaer, NY
Afshin Anoushiravani, MD, New York, NY
Richard R. Whipple, MD, Albany, NY

Traditionally, TSA has been performed in a hospital setting; however, our results suggest that properly selected TSA candidates may successfully undergo surgery in the outpatient setting.

Ambulatory vs. Inpatient Total Shoulder Arthroplasty: A Population-Based Analysis of Trends, Outcomes, and Charges
Gabriella Ode, MD, Charlotte, NC
Susan M. Odum, PhD, Charlotte, NC
Patrick M. Connor, MD, Charlotte, NC
Nady Hamid, MD, Charlotte, NC

Outpatient TSA is performed in a younger and healthier population and incurred lower charges. However, outpatient TSA still carries a slightly higher risk of readmission.
4:00 PM - 6:00 PM
Room 3401
Practice Management/Rehabilitation IV (841-855): Total Joints
Moderator: Christopher E. Peit, MD, Salt Lake City, UT and Ira H. Kirschenbaum, MD, Bronx, NY

4:00 PM  PAPER 841
Evidence of Pent-Up Demand for Total Hip and Total Knee Arthroplasty at Age 65
Adam Schwartz, MD, Phoenix, AZ
Kevin J. Bozic, MD, MBA, Austin, TX
Yu-Hui Chang, PhD, MPH, Scottsdale, AZ
David Etzioni, MD, MS, Phoenix, AZ

The findings of this study suggest that patients with hip and knee OA may delay elective TJR until they are eligible for Medicare enrollment.

4:06 PM  PAPER 842
Preoperative Albumin Levels Predict Adverse Postoperative Outcomes for All Total Joint Arthroplasties
Garrett Schwarzman, MD, Deerfield, IL
Deena Kishawi, BS, Chicago, IL
Alfonso Mejia, MD, MPH, Chicago, IL

There is a significant difference in 30-day postoperative complications between patients with normal albumin levels and low albumin levels after all total joint arthroplasties or revision arthroplasty.

4:12 PM  PAPER 843
Let Them Have NSAIDs: Routine Pediatric Fracture Healing is Not Impeded by Non-Steroidal Anti-Inflammatory Drugs
Walter B. Klyce, BA, Baltimore, MD
Greg Toci, BS, Baltimore, MD
Rushyuan J. Lee, MD, Baltimore, MD
Claire Shannon, MD, Baltimore, MD

No difference in pain medication was seen between routine pediatric fractures with nonunion/malunion and those with normal healing, suggesting that non-steroidal anti-inflammation is safe to use.

4:24 PM  PAPER 844
The Effects of Matching Discharge Opioid Prescriptions to Inpatient Requirements after Orthopaedic Procedures
Trevor Grace, MD, San Francisco, CA
Krishn Khanna, MD, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA
Alan Zhang, MD, San Francisco, CA

Matching discharge opioid regimens to inpatient use after orthopaedic surgery may help to curb excessive opioid dissemination. The present study analyzes the effects of this approach on refill rates.

4:30 PM  PAPER 845
Inpatient versus Outpatient Hip and Knee Arthroplasty: Which has Higher Patient Satisfaction?
Mick P. Kelly, MD, Chicago, IL
Tyler E. Calkins, BS, Morgantown, WV
Chris Culvern, Chicago, IL
Monica Kogan, MD, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL

This prospective study evaluated patient satisfaction with outpatient versus inpatient arthroplasty. Based on a 95% response rate, satisfaction was high in both groups but favored outpatient surgery.

4:36 PM  PAPER 846
The Rise of the #MeToo Movement and Safety of Your Orthopaedic Practice: A Canadian Orthopaedic Chaperone Survey
Evan Watts, MD, Burlington, ON, Canada
Jennifer Leighton, FRCSC, MD, Toronto, ON, Canada
Kevin Koo, MD, Markham, ON, Canada
Paul R. Kuzyk, MD, FRCSC, Toronto, ON, Canada

How safe is your orthopaedic practice? With the rise of the #MeToo movement, are orthopaedic surgeons optimizing their practice to ensure the safety of their patients and themselves?

4:48 PM  PAPER 847
Is It Safe? Outpatient Total Joint Arthroplasty with Discharge Home at a Free-Standing Ambulatory Surgical Center
Nancy Cipparrone, MA, Morton Grove, IL
Alexander C. Gordon, MD, Prospect Heights, IL
David J. Raab, MD, Morton Grove, IL
James R. Bresch, MD, Park Ridge, IL
Nishant Shah, MD, Northbrook, IL
Ritesh Shah, MD, Glenview, IL

Outpatient TJA with discharge home at a freestanding, independent ambulatory surgical center is a safe option after development of a multidisciplinary TJA pathway.

4:54 PM  PAPER 848
Aspirin Prophylaxis for Venous Thromboembolism Reduces Wound Complications after Total Joint Arthroplasty Compared to Warfarin: A Propensity Score Matched Analysis
Matthew Kheir, BS, Philadelphia, PA
Arash Aalirezaie, MD, Baltimore, MD
Michael M. Kheir, MD, Indianapolis, IN
Javad Parvizi, MD, FRCS, Philadelphia, PA

This retrospective study of total joint arthroplasty patients demonstrated that patients using aspirin for VTE prophylaxis had significantly fewer wound complications than warfarin users.
Reducing Postoperative Costs in Elective Total Joint Arthroplasty: A Role for Virtual Care and Telehealth

Christian A. Pean, MD, New York, NY
Daniel B. Buchalter, MD, New York, NY
Isabella Bianco, BA, New York, NY
Ran Schwarzkopf, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY

This study demonstrates the role of virtual care and telehealth in potential cost savings and quality improvement in the postoperative care of total joint arthroplasty patients.

Discussion

Tele-Rehabilitation for Total Hip and Knee Arthroplasty Patients: No Increase in Readmissions

Mary I. O’Connor, MD, New Haven, CT
Anne R. Moore, DNP, New Haven, CT
Lee E. Rubin, MD, New Haven, CT

Tele-rehabilitation after THA/TKA did not increase readmissions or ED visits. TKA patients had higher utilization than THA patients. Satisfaction was high, NPS 91.2; post-discharge costs were lower.

Discussion

Understanding Clinical Drivers and Economic Impacts of Hip and Knee Joint Replacement Episode Bundle Busters

Paul J. Duwelius, MD, Portland, OR
Bryan D. Springer, MD, Charlotte, NC
James I. Huddleston, MD, Redwood City, CA
Cecily Froemke, MS, Portland, OR
Susan M. Odum, PhD, Charlotte, NC
Said Sariolghalam, Seattle, WA
Katie Sypher, Renton, WA
Kevin Fleming, MBA, Maple Valley, WA

Identifying factors that can increase total episode costs above the target under a bundle supports the importance of care model improvements that address the needs of these more fragile patients.

Evaluation of Patient Preferences for Unicompartmental Knee Arthroplasty versus Total Knee Arthroplasty: A Discrete-Choice Experiment

Carolyn Huttyra, BS, Durham, NC
Juan Marcos Gonzalez, PhD, Durham, NC
Reed Johnson, PhD, Chapel Hill, NC
Shelby Reed, Durham, NC
Jui-Chen Yang, Bellevue, WA
John Reuter, Durham, NY
Keith R. Berend, MD, New Albany, OH
Michael E. Berend, MD, Indianapolis, IN
Steven J. MacDonald, MD, London, ON, Canada
Michael P. Bolognesi, MD, Durham, NC
Annunziato Amendola, MD, Durham, NC
Richard C. Mather, MD, Durham, NC

Duke University Health System - Department of Orthopaedic Surgery & Duke Clinical Research Institutes

Understanding the risk-benefit tradeoffs of surgical treatment for knee osteoarthritis.

Discussion

What are the Implications of Withholding Total Joint Arthroplasty in Patients with Morbid Obesity? A Prospective Observational Study

Bryan D. Springer, MD, Charlotte, NC
Krista R. Bossi, MS, Charlotte, NC
Susan M. Odum, PhD, Charlotte, NC
David Voellinger, Charlotte, NC

Restricting TJA in morbidly obese patients does not incentivize preoperative weight loss as only 20% of patients ultimately underwent TJA with the majority of those remaining morbidly obese.

Discussion

Is Patient Satisfaction Higher with Inpatient or Same Day Total Joint Arthroplasty?

Vasili Karas, MD, Durham, NC
Gregory C. Manista, MD, MS, Chicago, IL
Linda Suleiman, MD, Chicago, IL
Chris Culvern, Chicago, IL
Richard A. Berger, MD, Chicago, IL

The purpose of this study is to compare patient satisfaction between same-day total joint replacement and inpatient total joint replacement when patient preference is the key driver of the decision.
The implementation of standardized care pathway was successful in reducing SNF discharge disposition, SNF length of stay, and, thereby, SNF costs following TKA.

Discussion

Musculoskeletal Oncology III (856-870): Musculoskeletal Tumors III
Moderators: Dieter Lindskog, MD, New Haven, CT and Felasfa M. Wodajo, MD, Fairfax, VA

Patellar Tendon Augmentation is Not Necessary in Proximal Tibia Endoprosthetic Reconstruction
Russell Stitzlein, MD, Houston, TX
Justin E. Bird, MD, Houston, TX
Spencer J. Frink, MD, Friendswood, TX
Patrick P. Lin, MD, Houston, TX
Bryan S. Moon, MD, Houston, TX
Robert L. Satcher, MD, Houston, TX
Valerae O. Lewis, MD, Houston, TX

Primary patellar tendon repair in proximal tibia endoprosthetic reconstruction performs as well as or better than patellar tendon augmentation with respect to extensor lag, ROM, and complications.

Artificial Intelligence versus Orthopaedic Oncologists in Radiographic Detection of Bone Tumors
Tadahiko Kubo, MD, PhD, Hiroshima, Japan

AI might be a better interpreter to read radiographs of bone tumors than orthopaedic oncologists.
4:36 PM PAPER 861
Modular Fluted Tapered Stems in Aseptic Oncologic Hip Arthroplasty Salvage: A Game Changer
Joshua Bingham, MD, Rochester, MN
Meagan E. Tibbo, MD, Rochester, MN
Christopher P. Beauchamp, MD, FRCS (Ortho), Phoenix, AZ
David G. Lewallen, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

This is the first study to report on the use of modular fluted tapered stems in the oncologic setting, with 100% survivorship free of aseptic loosening even in those with prior femoral radiation.

Discussion

4:48 PM PAPER 862
Clinical Results of Endoscopic Curettage without Bone Grafting for Enchondroma in Hand
Masaaki Kobayashi, Ogaki City, Japan
Hideki Okamoto, MD, PhD, Nagoya, Japan
Isato Sekiya, MD, PhD, Yatomi-City, Japan
Jun Mizutani, MD, Nagoya, Japan
Hisaki Aiba, MD, Nagoya City, Japan
Masahiro Nozaki, MD, Nagoya, Japan

Endoscopic curettage without bone grafting for enchondroma in hand can get good clinical results with good new bone formation in spite of no bone grafting with minimal surgical invasion.

4:54 PM PAPER 863
Clinical Outcomes of More than 10-Year Survivors after Total En Bloc Spondylectomy for Spinal Tumors
Satoshi Kato, MD, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Kazuya Shinmura, MD, Ishikawa, Japan
Takaki Shimizu, Kanazawa, Japan
Norihiro Oku, MD, Kanazawa, Japan
Ryo Kitagawa, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated the clinical outcomes with follow up exceeding 10 years after total en bloc spondylectomy for spinal tumors. This study showed the outcomes to be favorable, even with metastatic tumors.

5:00 PM PAPER 864
Outcomes of Free Vascularized Fibular Grafts for the Treatment of Radiation-Induced Femoral Nonunions
Meagan E. Tibbo, MD, Rochester, MN
Matthew T. Houdek, MD, Rochester, MN
Karim Bakri, MD, Mayo Clinic, MN
Stephen A. Sens, MD, Rochester, MN
Steven L. Moran, MD, Rochester, MN

Free vascularized fibular grafts are a reliable treatment option for radiation-induced pathologic femoral fracture nonunions, providing a union rate of 79% and an improvement in functional outcome.

Discussion

5:12 PM PAPER 865
Adjuvant Denosumab Failed to Prevent Giant Cell Tumor of Bone Recurrence But May Obtain Disease Control After Rechallenge
Chia-Che Lee, MD, Taipei, Taiwan
Hsiang-Chieh Hsieh, Taipei, Taiwan
Shin Ying Lin, New Taipei City, Taiwan
Wei-Wu Chen, Taipei, Taiwan
Rong-Sen Yang, MD, Taipei, Taiwan
Shau-Huai Fu, MD, Yunlin County, Taiwan
Wei-Hsin Lin, MD, Hsinchu City, Taiwan
Yi-Chen Li, MD, Kaohsiung City, Taiwan

Rechallenge periodic Denosumab achieved good disease control in recurrent cases previously exposed to 6-month-course of Denosumab.

5:18 PM PAPER 866
Combination Chemotherapy for Aggressive Fibromatosis: Preliminary Results from Beta-Catenin Inhibitor, Dexamethasone, and Focal Adhesion Kinase Inhibitor
Sean P. Ryan, MD, Durham, NC
Vijitha Puviindran, Durham, NC
Puviindran Nadesan, Durham, NC
Benjamin Alman, MD, Durham, NC

Combination chemotherapy for aggressive fibromatosis can suppress proliferation and increase apoptosis, thereby significantly decreasing tumor number and volume in murine models.

5:24 PM PAPER 867
Oncologic and Functional Outcomes after Treatment for Desmoid Fibromatosis of the Extremities
Erik Newman, Boston, MA
Jonathan Lans, MD, Boston, MA
Jason Kim, BS, Boston, MA
Marco Ferrone, MD, FRCSC, Boston, MA
Joseph H. Schwab, MD, Boston, MA
Kevin A. Raskin, MD, Boston, MA
Santiago A. Lozano Calderon, MD, PhD, Boston, MA

We identified clinical variables associated with event-free survival in patients treated for desmoid tumors of the extremities. Using PROMIS data, we also assessed symptomatic and functional outcomes.

Discussion

5:36 PM PAPER 868
Risk Adjustment is Necessary in Value-Based Payment Models for Arthroplasty for Oncology Patients
Timothy Tan, MD, Philadelphia, PA
Paul M. Courtneu, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Scot Brown, MD, Philadelphia, PA
Karl E. Swanson, MS, Blackwood, NJ
John A. Abraham, MD, Philadelphia, PA

Patients undergoing arthroplasty for malignancy utilize more resources in an episode-of-care than primary hip arthroplasty for osteoarthritis or fracture.
Hospital Resource Utilization Associated with Endoprosthetic Reconstruction Versus Primary Arthroplasty

Christina J. Gutowski, MD, Camden, NJ
Christen Hoedt, MD, Mount Ephraim, NJ
Alec S. Kellish, BS, Clark, NJ
Tae W. Kim, MD, Camden, NJ
Richard D. Lackman, MD, Camden, NJ

Endoprosthetic reconstructions are more costly and morbid than primary arthroplasty, and this difference is not accurately reflected in the current CPT code set.

Oncology Patients are High Cost Outliers in Bundled Payments for Total Joint Replacement

Erik Woelber, MD, Anchorage, AK
Yee-Cheen Doung, MD, Portland, OR
Kathryn Schabel, MD, Portland, OR
James B. Hayden, MD, Lake Oswego, OR
Jonah Geddes, MPH, Portland, OR
Lauren Raymond, BS, Portland, OR
Saifullah Hasan, BS, Portland, OR
Kenneth R. Gundle, MD, Tigard, OR

Although the purpose of the CJR bundled payments system is to reduce the cost curve for total joint arthroplasty, orthopaedic oncology patients far exceed the hospital costs of patients with OA.

Discussion
Nursing and Allied Health Program Continuing Education

Nurses
A total of 32 contact hours are being offered through NAON; 4.0 contact hours for each NUR course and 8.0 each for the CAST1 and CAST2 courses. Each session is provider approved by the California Board of Registered Nursing, Provider Number CEP3432, for 16.00 total contact hours for all of the NUR courses and 16.00 contact hours for both the CAST1 and the CAST2 courses. The National Association of Orthopaedic Nurses is accredited as a provider of continuing nursing education by the American Nurses’ Credentialing Center’s Commission on Accreditation.

Orthopaedic Technologists
Applying to the National Board for Certification of Orthopaedic Technologists for approval of a total of 32 contact hours or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

Physician Assistants
Applying to the American Academy of Physician Assistants (AAPA) for Category 1 CME credit from the AOA Council on Continuing Medical Education, Prescribed credit from the AAFP and AMA Category 1 CME credit for the PRA from organizations accredited by the ACCME. Total number of contact hours: 32.

Orthopaedic Physician Assistants
Applying to the National Board for Certification of Orthopaedic Physician Assistants for approval of a total of 32 contact hours for orthopaedic physician assistants or 4 contact hours for each NUR session and 8 contact hours each for the CAST1 and CAST2 courses.

General
Certificates for sessions will be available online once a participant completes a session. A link to the evaluation will be distributed to participants via email following each session. Please be sure to give your correct e-mail address when registering for the courses. Once participants complete the evaluation, a contact hour certificate will be available to print.

To receive any certificate other than nursing, please visit the registration counter in front of the session. For credit that may be acceptable to state medical associations, specialty societies or state boards of medical licensure, please contact those organizations. NAON, AAOS and NAOT make every effort to have the course approved for credit prior to the course dates. It is not always possible to obtain approval in advance of a program.

NUR1 – Advances and Innovation in Total Joint Arthroplasty and Care Coordination
Tuesday
7:30 AM - 12:00 PM
Room 2204
Course Co-Chairs:
Franz Vergara, PhD, DNP, RN, ONC, CCM
Julius Oni, MD

Overview
This course highlights the Total Joint Arthroplasty patient population and trending developments influencing a rapid pace of change in multiple arenas. Learners will receive information regarding outcomes with Care Coordination, and gain effective strategies and key evidence-based best practices that can drive improvements. Research endeavors regarding safe and effective venous thromboembolism (VTE) prophylaxis will be shared. A road map will be presented for implementing an evidence-based practice regarding a multi-modal pain management program for the TKA patient in the clinical setting. Current perspectives regarding revisions in joint arthroplasty will also be discussed.

Program
7:30 AM  Welcome
Tandy Gabbert, MSN, RN, ONC
NAON Director of Education
Susan Scherl, MD
AAOS Allied Health Program Director
Mickey D. Haryanto, RN-BC, MBA, ONC
2018 – 2019 NAON President

Introductions
Franz Vergara, PhD, DNP, RN, ONC, CCM
Julius Oni, MD

7:45 AM  Our Journey to Implementing a Successful Joint Care Coordinator Program
Stacey Filippi, BSN, RN-BC
Terry Bakowicz, RN, MS, CCM
The learner will be empowered to implement or improve a joint care coordinator program that follows the patient through the continuum of care and meets the demands of a bundled payment system.

8:30 AM  What’s Hot? The Pulmonary Embolism Prevention after Hip and Knee Replacement (PEPPER) Trial
Vincent D. Pellegrini, Jr., MD
Mickey D. Haryanto, RN-BC, MBA, ONC
The participant will apply the information received to the practice setting and make appropriate practice changes.

9:15 AM  How to Implement a Multi-Modal Pain Management Plan That Improves Key Metrics for Primary Total Knee Replacements
Rachel Torani, BSN, RN
The participant will apply the information received to the practice setting and make appropriate practice changes to implement a multi-modal pain management plan for total knee replacement.

9:45 AM  Break

10:00 AM  Best Practices in Bundled Payment Care Redesign Efforts through Nurse-led Care Coordination
Sandra Stricklan, RN, CCM
John Tessier, MD
Catherine Ulrich, RN, ACM-RN
The learner will be able to implement appropriate practice changes that facilitate management of the entire orthopedic episode of care and engage all providers in care coordination efforts.

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10:45 AM  Revision in Joint Arthroplasty
Franz Vergara, PhD, DNP, RN, ONC, CCM
Julius Oni, MD
The learner will gain knowledge and perspective from the information, leading to appropriate interventions in clinical practice.

11:30 AM  Optimization of Enhanced Rapid Recovery Among Total Joints Arthroplasty
Wesam Abuzaiter, MSC
The learner will be prepared to implement the evidence-based practices shared in this education to improve the patient outcome, utilize team expertise and save costs.

12:00 PM  Adjournment

NUR2 – Optimal Care of the Orthopaedic Spinal Patient, Hip Fracture And Pain Management
Tuesday
1:30 PM - 6:00 PM
Room 2204
Course Co-Chairs:
Franz Vergara, PhD, DNP, RN, ONC, CCM
Julius Oni, MD

Overview
This course begins with sessions addressing pain management and opioid stewardship in the care of the orthopaedic patient. In-depth sessions will highlight successes actualized in development of a spine program with targeted patient outcomes in a tertiary hospital setting; a perioperative surgical home model for spine patients to optimize patient outcomes will be shared. Additionally, the value and contribution of the interprofessional team is highlighted in these sessions. Finishing the course will be a discussion of Fracture Liaison Services (FLS) as best practice to collaboratively help decrease the burden of osteoporosis.

Program
1:30 PM  Welcome
Tandy Gabbert, MSN, RN, ONC
NAON Director of Education
Susan Scheri, MD
AAOS Allied Health Program Director
Mickey D. Haryanto, RN-BC, MBA, ONC
2018 – 2019 NAON President

Introductions
Franz Vergara, PhD, DNP, RN, ONC, CCM
Julius Oni, MD

1:45 PM  Reducing Opioid Usage and Pain Scores Following Total Joint Replacements in a Community Hospital: A Multi Modal Approach
Kyala Natalia Pascual, RN, ONC
Christopher Adams, PharmD, BCPS, BCCCP
Luigi Brunetti PharmD, MPH
Learners will recognize alternative pain modalities after knee and hip replacement and apply concepts of multi-modal pain relief in their everyday practice.

2:30 PM  Comprehensive Evidence-Based Opioid Management in Orthopaedics
Adam R. English, APRN, FNP-C
Utilizing this education and relevant resources, the learner will be able to develop or improve a plan for safe opioid management for orthopaedic patients.

3:00 PM  Building a Successful Spine Program through Multidisciplinary Collaboration Across Disciplines
Laura C. Arkin, MSN, CNS, ONC, CCNS
Matthew Burkhalter, DPT
Christopher Ingram, BSN, RN, ONC
The learner will be prepared to implement, improve or contribute to an evidence based spine program across the continuum of care.

3:45 PM  Break

4:00 PM  Perioperative Surgical Home:Optimizing Patients Undergoing Spinal Fusion Procedures
Diane R. Eckhouse, MS, APN, OCNS-C
Fleurette Kikolomeister, RN MS
Nadine Trznadel, RN, MSN, CNS, ONC
Participants will be empowered to implement the PSH model within their healthcare facility and/or healthcare system, utilizing the tools and pathways presented in this educational activity.

5:00 PM  The Value and Care Experience of Fracture Liaison Services: A Focus Group Study
Sharon Chow, DNP, RN, ANP-BC, PNP-BC, AGNP, PHN, CCD
The learner will advocate best practices for the care of patients with fragility fracture.

6:00 PM  Adjournment

NUR3 – Orthopaedic Nursing Care Across the Continuum
Wednesday
7:30 AM – 12:00 PM
Room 2204
Course Co-Chairs:
Cindy Lewis, MSN, RN, APN-BC,ONP-C
Reid Brown, MD

Overview
This course offers a broad scan of nursing care of musculoskeletal conditions in varied patient populations and clinical settings. A comprehensive session will focus on Oncology sequelae related to orthopaedic patients with a review of common pathologies, clinical presentation and workup. The role of surgery in bone metastasis management will be outlined, also the role of radiation therapy and systemic treatment. Another session will highlight imaging studies in orthopaedic oncology. Pediatric sessions include the newest evidence and innovation in the field of early onset scoliosis (including Non-Operative and Operative treatments); sports related fractures about the knee (for the nurse practitioner in the clinic, urgent care setting, primary care or sports medicine); also general trauma in Pediatrics. A novel session draws attention to the potential for PTSD in the civilian population following mangled hand injury and shares screening strategies.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
NURSING AND ALLIED HEALTH

Program
7:30 AM Welcome
Tandy Gabbert, MSN, RN, ONC
NAON Director of Education
Susan Scherl, MD
AAOS Allied Health Program Director
Mickey D. Haryanto, RN-BC, MBA, ONC
2018 – 2019 NAON President

Introductions
Cindy Lewis, MSN, RN, APN-BC,ONP-C
Reid Brown, MD

7:45 AM Management of Extremity Metastatic Bone Disease
Kristen E. Elliott, RN, BSN
Anna Cooper, MD
Apply relevant information to the clinical setting to improve patient care and outcomes.

8:30 AM Current Trends in Early Onset Scoliosis: Is There Magic in the Air?
Jill Ariagno, MSN, RN, CPNP
Implement applicable practice changes from this education in the clinical setting.

9:00 AM Trauma in Pediatrics
Bonnie Marie, RN, BSN
Henry Ellis, MD
Adopt strategies from this education that are relevant to the clinical setting.

9:45 AM Sports Related Fractures About the Knee
Heather Barnes, DNP, APRN, CPNP, ONC
Apply relevant information to the clinical setting or in a community setting.

10:15 AM Break

10:30 AM Screening for PTSD in Civilians With Mangled Hand Injury: A Practice Enhancement Approach
Ruth A. Cook, ONP-C
Christopher Allan, MD
Adopt strategies from this education that are relevant to the clinical setting.

11:15 AM Ortho Oncology – Imaging Studies
Peter Buecker, MD
Adopt strategies from this education that are relevant to the clinical setting and community outreach.

12:00 PM Adjournment

Program
1:30 PM Welcome
Tandy Gabbert, MSN, RN, ONC
NAON Director of Education
Susan Scherl, MD
AAOS Allied Health Program Director
Mickey D. Haryanto, RN-BC, MBA, ONC
2018 – 2019 NAON President

Introductions
Cindy Lewis, MSN, RN, APN-BC,ONP-C
Reid Brown, MD

1:45 PM Improving Patient Experience and Value Outcomes in TKA Pain Management: A Clinical Trial
Cindy Lewis, MSN, RN, APN-BC,ONP-C
Reid Brown, MD
Implement strategies that reflect a patient focused, clinically and financially sound approach with patients undergoing TKA.

2:45 PM Geriatric Hip Fractures: An Intraprofessional Approach To Reducing Opioid-Induced Delirium and Improving Patient Outcomes
Margaret Gniewosz, RN, MSN
Nicholas A. Abidi, MD
Denise Williams, RN, MSN, CNS
Implement or improve interventions in the hip fracture populations addressing early pain management, an accelerated path to surgery and enhanced patient mobilization.

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3:30 PM  Break

3:45 PM  Tele-Rehabilitation for TJA: Does It Work?
Anne R. Moore, DNP, MSN, MS, BSN, CSSGB
Mary I. O’Connor, MD
Explore and incorporate innovative strategies in the orthopaedic patient population to improve outcomes utilizing new technologies and methods.

4:30 PM  Transitions of Care: Preparing the Patient for Early Discharge to Home after Total Joint Replacement Surgery
MaryAnne Cronin, PharmD
Debra Schulman, RN, BSN, MBA, CCRC
Adopt current evidence-based approached to patient education regarding medications and self-management prior to discharge from the hospital or healthcare setting.

5:15 PM  Creation of a Mobility Planning Tool to Promote Early Mobilization
Cynthia LaRocca, MSN, RN
Ronald Nonailada, MPA, OTR/L
Ellen Schantz, MSN, RN
Identify and implement patient mobilization strategies that are safe for patients and safe for caregivers.

6:00 PM  Adjournment

CAST2 – Casting and Splinting Skills Workshop (Advance)
Friday
8:15 AM - 5:45 PM
Room 310
Sponsored by the National Association of Orthopaedic Technologies
Course Co-Chairs:
Cynthia Henderson, OTC, CO
John Priestly, OTC
Jason Thompson, OTC
Kaici Gulbrandson, OTC
Sean Conkle, OTC

Overview
A hands-on interactive skills session outlining advanced casting applications and other immobilization techniques. The “show one, do one” atmosphere will allow each participant to apply newly learned skills. Dress appropriately to perform casting applications and removals.

Program
8:15 AM  Introductions
8:30 AM  Ulnar Gutter Cast
9:00 AM  Radial Gutter Cast
10:00 AM  Break
10:15 AM  Hands on Workshop
1:30 PM  Short Leg Cast with Toe Plate
2:00 PM  Total Contact Cast
2:30 PM  Break
2:45 PM  Workshop
5:30 PM  Questions and Answers

CAST1: Casting and Splinting Skills Workshop (Fundamentals)
Thursday
8:15 AM – 5:45 PM
Room 310
Sponsored by the National Association of Orthopaedic Technologies
Course Co-Chairs:
Cynthia Henderson, OTC, CO
John Priestly, OTC
Jason Thompson, OTC
Kaici Gulbrandson, OTC
Sean Conkle, OTC

Overview
This full-day course will utilize informative lectures and a hands-on workshop to provide attendees with a comprehensive introduction to the fundamentals of Casting and Splinting

Program
8:15 AM  Introductions
8:30 AM  Casting Complications
9:00 AM  Short Arm Cast Demonstration
9:30 AM  Short Arm Volar Splint Demonstration
9:45 AM  Sugar Tong Splints
10:15 AM  Break
10:30 AM  Hands on Workshop
12:30 PM  Lunch
1:30 PM  Short Leg Cast Demonstration
2:00 PM  Short Leg Posterior Stirrup Demonstration
2:30 PM  Break
2:45 PM  Hands on Workshop
5:30 PM  Questions and Answers

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AWARD WINNER – ADULT RECONSTRUCTION HIP

Surgical Technique for Reconstruction of Severe Acetabular Defects During Revision Total Hip Arthroplasty
Lucian B. Solomon, MD, Adelaide, Australia
Daud Chou, FRCS (Ortho), MBBS, MSc, Surrey, United Kingdom
Jerome Davidson, MD, London, United Kingdom
Peter Smitham, FRACS, FRCS (Ortho), PhD, Burnside, Australia
Jochen G. Hofstaetter, MD, Vienna, Austria
Dennis Kosuge, FRCS (Ortho), Harlow, United Kingdom
John M. Abrahams, Toorak, Australia
Stuart A. Callary, PhD, Adelaide, Australia
Donald Howie, MD, PhD, Adelaide, Australia

This video illustrates techniques to safely extend a posterior hip approach above the superior gluteal bundle and secure revision cups with long ischial and pubic screws for improved cup fixation.

AWARD WINNER – ADULT RECONSTRUCTION HIP

Optimal Anatomic Acetabular Component Positioning and Size for Total Hip Arthroplasty via the Direct Anterior Approach
Nathaniel Mercer, BA, MS, Hempstead, NY
Luke G. Menken, DO, New York, NY
Joseph D. Lipman, MS, New York, NY
Jonathan Robinson, MD, New York, NY
Evan J. Hawkins, MD, Middletown, NY
Jose A. Rodriguez, MD, New York, NY

With optimal acetabular component positioning and size for the direct anterior approach, the risk of iliopsoas impingement, instability, and other complications associated with a malpositioned socket is decreased.

AWARD WINNER – HAND AND WRIST

Limited Palmar and Digital Dermofasciectomy for Management of Recurrent Dupuytren Disease
Lauren Karbach, MD, Rochester, NY
Mark Schreck, MD, Rochester, NY
Warren C. Hammert, MD, Rochester, NY

We discuss the relevant basic science and anatomy associated with Dupuytren disease and demonstrate management of recurrent Dupuytren disease via palmar and digital dermofasciectomy.

AWARD WINNER – FOOT AND ANKLE

Modified Grice-Green Subtalar Arthrodesis in Adults With Flatfoot
Cesare Faldini, MD, PhD, Bologna, Italy
Giuseppe Geraci, MD, Bologna, Italy
Antonio Mazzotti, MD, Bologna, Italy
Alessandro Panciera, MD, Dimaro Folgarida, Italy
Fabrizio Perna, MD, Bologna, Italy
Niccolò Stefanini, MD, Bologna, Italy
Francesco Pardo, MD, Bologna, Italy
Federico Pilla, MD, Bologna, Italy
Alberto Ruffilli, MD, PhD, Bologna, Italy

This video presents the surgical technique for and evaluates the results of modified Grice-Green subtalar arthrodesis in 109 consecutive adults with flatfoot.

AWARD WINNER – PEDIATRICS

Open Anterior Approach to the Middle and Lower Thoracic Spine
Cosma Calderaro, MD, Rome, Italy
Jocelyn T. Compton, MD, MSc, Iowa City, IA
Luca Labianca, MD, Rome, Italy
Kazuta Yamashita, MD, Tokushima, Japan
Piyush Kalakoti, MBBS, MD, Iowa City, IA
Stuart L. Weinstein, MD, Iowa City, IA

Severe spine deformities often require correction in multiple planes. An anterior release of the spine may be an adjunctive procedure necessary for the management of severe and rigid deformities.

AWARD WINNER – SHOULDER AND ELBOW

Arthroscopy-Guided Latarjet Procedure With Suture-Button Fixation as a Safe and Reliable Alternative to Screw Fixation
Pascal Boileau, MD, Nice, France

A guided surgical approach for the arthroscopic Latarjet procedure optimizes graft positioning, and suture-button fixation is a safe and reliable alternative to screw fixation.

AWARD WINNER – SPORTS MEDICINE

Proximal Hamstring Tears: From Anatomy to Surgical Repair
William H. Marquez, MD, Medellin, Columbia
Juan C. Gomez Hoyos, MD, Dallas, TX
Luis P. Carro, MD, Cantabria, Spain
Rafael Arriaza Loureda, MD, Perillo, Spain
Bernardo Aguilera, MD, Cali, Colombia
Lorena Bejarano-Pineda, MD, Durham, NC
Francisco Javier Monsalve, MD, Medellin, Colombia
Alvaro Vanegas, MD, Medellin, Colombia

Proximal hamstring rupture from the ischial tuberosity occurs acutely during high-speed activities. Surgical repair of proximal hamstring tears results in subjective highly satisfactory outcomes.

AWARD WINNER – SPORTS MEDICINE

Fixation of Fibular Head Avulsion Fractures With a Proximal Tibiofibular Screw
Ryan Paul, MD, Toronto, Canada
Daniel Whelan, MD, Toronto, Canada
Ryan Khan, Toronto, Canada

This video describes a novel fixation technique and discusses a case series of fibular head avulsion fractures. Our technique stabilizes the posterolateral ligament complex and facilitates early range of motion.
Management of Extraforaminal Disk Herniation via Minimally Invasive Articular Process-Sparing Lateral Laminectomy

Cesare Faldini, MD, PhD, Bologna, Italy
Fabrizio Perna, MD, Bologna, Italy
Antonio Mazzotti, MD, Bologna, Italy
Giuseppe Geraci, MD, Bologna, Italy
Francesco Pardo, MD, Bologna, Italy
Alessandro Panciera, MD, Dimaro Folgarida, Italy
Alberto Ruffilli, MD, PhD, Bologna, Italy
Alberto C. Di Martino, MD, PhD, Rome, Italy
Francesco Traina, MD, PhD, Bologna, Italy

This video shows the surgical procedure for extraforaminal lumbar diskectomy using high-definition intraoperative footage and anatomic tables.

Terrible Triad Reconstruction

Hisham Awan, MD, Columbus, OH
Joe A. Rosenbaum, MD, Columbus, OH
Kara Calvell, Columbus, OH
Austin J. Roebke, BS, Columbus, OH

We present the technique for terrible triad reconstruction. Indications, contraindications, technical pearls, and potential pitfalls are discussed. Radial head repair with headless screws and lateral collateral ligament reconstruction are performed.

Differences Between Re-Revision Total Knee Arthroplasty and Primary Revision Total Knee Arthroplasty

Federica Rosso, MD, Turin, Italy
Umberto Cottino, MD, Pecetto Torinese, Italy
Federico Dettoni, MD, Turin, Italy
Matteo Bruzzone, MD, Turin, Italy
Davide E. Bonasia, MD, Turin, Italy
Roberto Rossi, MD, Turin, Italy

Re-revision total knee arthroplasty is a complex surgical procedure. This video reviews data on the cause of failure, preoperative planning, and the problems that may occur during re-revision total knee arthroplasty.

Medial Ankle Instability

Benjamin Lindsey, MD, Ann Arbor, MI
Matthew Pigott, MD, La Jolla, CA
James R. Holmes, MD, Ann Arbor, MI
David M. Walton, MD, Dexe, MI
Paul Talusan, MD, Ann Arbor, MI

This video provides an overview of medial ankle instability and discusses a technique for open deltoid ligament repair with augmentation using suture tape.

Camitz Opponensplasty

Randipsingh R. Bindra, FRACS, FRCS, MD, Bundall, Australia
Wasim Awal, Southport, Australia

Camitz opponensplasty is a useful technique that restores thumb opposition in patients with severe carpal tunnel syndrome by transferring the palmaris longus tendon to the abductor pollicis brevis insertion.

Submuscular Bridge Plating for Management of Pediatric Femur Fractures

Amr A. Abdelgawad, MD, El Paso, TX
Ahmed Elabd, MD, El Paso, TX
Isaac Fernandez, MD, El Paso, TX
Ahmed Thabet Hagag, MD, El Paso, TX
Enes M. Kanlic, MD, Chandler, AZ

Submuscular bridge plating affords reliable fixation and healing for complex pediatric femur fractures and may have a broader application in orthopaedics.

Gluteus Maximus Tendon Transfer for Management of Primary Abductor Insufficiency

Tyler Luthringer, MD, New York, NY
Samuel Baron, Danbury, CT
Dylan T. Lowe, MD, New York, NY
Thomas Youm, MD, New York, NY

This video discusses the case presentation of a patient with primary abductor insufficiency as a result of a chronic gluteus medius tendon tear and abductor fatty atrophy who underwent gluteus maximus tendon transfer.

Anterolateral Ligament Repair via Augmentation

Edoardo Monaco, MD, Rome, Italy
Daniele Mazza, MD, Rome, Italy
Andrea Redler, MD, Rome, Italy
Cosma Calderaro, MD, Rome, Italy
Lorenzo Proietti, MD, Rome, Italy
Megan R. Wolf, MD, Rocky Hill, CT
Andrea Ferretti, MD, Rome, Italy

This video presents a new technique for anterolateral ligament repair via augmentation. Repair of the anterolateral ligament via augmentation may allow for faster rehabilitation, protecting the graft during healing.

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ADULT RECONSTRUCTION HIP

Surgical Technique for Reconstruction of Severe Acetabular Defects During Revision Total Hip Arthroplasty
Lucian B. Solomon, MD, PhD, Adelaide, Australia
Daud Chou, FRCS (Ortho), MBBS, MSc, Surrey, United Kingdom
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Dennis Kosuge, FRCS (Ortho), Harlow, United Kingdom
John M. Abrahams, Toorak, Australia
Stuart A. Callary, PhD, Adelaide, Australia
Donald Howie, MD, PhD, Adelaide, Australia

This video illustrates techniques to safely extend a posterior hip approach above the superior gluteal bundle and secure revision cups with long ischial and pubic screws for improved cup fixation.

Optimal Anatomic Acetabular Component Positioning and Size for Total Hip Arthroplasty via the Direct Anterior Approach
Nathaniel Mercer, BA, MS, Hempstead, NY
Luke G. Menken, DO, New York, NY
Joseph D. Lipman, MS, New York, NY
Jonathan Robinson, MD, New York, NY
Evan J. Hawkins, MD, Middletown, NY
Jose A. Rodriguez, MD, New York, NY

With optimal acetabular component positioning and size for the direct anterior approach, the risk of ilioptosais impingement, instability, and other complications associated with a malpositioned socket is decreased.

Total Hip Arthroplasty and Femoral Shortening Osteotomy in Patients With Developmental Dysplasia of the Hip
Jonathan Robinson, MD, New York, NY
Aakash Keswani, New York, NY
Darwin D. Chen, MD, New York, NY

Total hip arthroplasty in patients with Crowe type IV hip deformity is a challenge for orthopaedic surgeons. This video demonstrates total hip arthroplasty and femoral shortening osteotomy with the use of a handheld nerve stimulator.

Anterior-Based Muscle-Sparing Approach for Total Hip Arthroplasty and Transitioning from a Posterior Approach for Total Hip Arthroplasty: Minimizing the Learning Curve
Ryland Kagan, MD, Portland, OR
Scott Lindsley, Salt Lake City, UT
Mike Anderson, MSc, Salt Lake City, UT
Jill Erickson, PA, Salt Lake City, UT
Christopher L. Peters, MD, Salt Lake City, UT

This video reports on the early transition period of an experienced orthopaedic surgeon from a traditional posterior total hip arthroplasty approach to an anterior-based muscle-sparing approach.

Iliotibial Band–Sparing Total Hip Arthroplasty via a Superior Portal-Assisted Approach
Eytan Debbi, MD, PhD, Los Angeles, CA
Sean Rajaei, MD, Boston, MA
Derek Ju, MD, West Hollywood, CA
John Garlich, MD, Los Angeles, CA
Brad L. Penenberg, MD, Beverly Hills, CA

This video demonstrates iliotibial band–sparing total hip arthroplasty via a superior portal-assisted approach.

Gluteus Maximus Muscle Transfer for Management of Abductor Deficiency of the Hip
Bernardo Aguilera, MD, Cali, Colombia
Juan C. Gomez Hoyos, MD, Dallas, TX
Ruddy Coaquira, Cali, Colombia
Miguel Brugiatti, MD, Cali, Colombia
Francisco Javier Monsalve, MD, Medellin, Colombia
Alvaro Vanegas, MD, Medellin, Colombia
William H. Marquez, MD, Medellin, Colombia

Abductor muscle deficiency of the hip joint results in severe pain over the lateral aspect of hip, a limp, and hip joint instability. This video shows transfer of the gluteus maximus muscle to the greater trochanter.

Revision Total Hip Arthroplasty for Management of Advanced Oxidized Zirconium Wear
Jessica Morton, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY

This video discusses the case presentation of a patient who underwent revision total hip arthroplasty for management of advanced oxidized zirconium wear and reviews alternative bearing surfaces.

Cemented Total Hip Arthroplasty via a Direct Anterior Approach
Zachary Berliner, MD, New York, NY
Luke G. Menken, DO, New York, NY
Nathaniel Mercer, BA, MS, Hempstead, NY
Jose A. Rodriguez, MD, New York, NY

Cemented total hip arthroplasty via a direct anterior approach is a challenge for orthopaedic surgeons. This video highlights surgical tips to achieve successful outcomes in patients who undergo cemented total hip arthroplasty.

Custom Dual-Mobility Liners for Revision Hip Resurfacing
Riccardo Orsini, MD, Bologna, Italy
Daniele Fabbri, MD, Milano, Italy
Francesco Acri, MD, Milano, Italy
Giovanni Micera, MD, Bologna, Italy
Antonio Moroni, MD, Milano, Italy

This video presents a new option for management of failed hip resurfacing, which involves the use of custom dual-mobility liners.
ADULT RECONSTRUCTION KNEE

Usefulness of Fluoroscopy for Extramedullary Tibial Bone Cutting and Arthroscopy for Excess Cement Removal in Medial Unicompartmental Knee Arthroplasty
Han-Jun Lee, MD, Seoul, Korea, Republic of
Yong-Beom Park, MD, Seoul, Korea, Republic of
Jae Sung Lee, MD, PhD, Seoul, Korea, Republic of
Dong-Hyun Kim, Seoul, Korea, Republic of
Beoung-Il Yun, MD, Seoul, Korea, Republic of
Dong-Hoon Lee, Seoul, Korea, Republic of
Sukho Baek, Seoul, Korea, Republic of
Kwang-Jin Chun, Seoul, Korea, Republic of
Hyeongjun Park, Seoul, Korea, Republic of

This video demonstrates the manner in which fluoroscopy improves the accuracy of tibial bone cutting and the manner in which arthroscopy aids in retained cement removal in the posteromedial compartment.

Differences Between Re-Revision Total Knee Arthroplasty and Primary Revision Total Knee Arthroplasty
Federica Rosso, MD, Turin, Italy
Umberto Cottino, MD, Pecetto Torinese, Italy
Federico Dettoni, MD, Turin, Italy
Matteo Bruzzone, MD, Turin, Italy
Davide E. Bonasia, MD, Turin, Italy
Roberto Rossi, MD, Turin, Italy

Re-revision total knee arthroplasty is a complex surgical procedure. This video reviews data on the cause of failure, preoperative planning, and the problems that may occur during re-revision total knee arthroplasty.

Robot-Assisted Total Knee Arthroplasty With Active Ligament Tensioning
Jeffrey H. DeClaire, MD, Rochester, MI

This video reviews the technique for gap-balancing total knee arthroplasty with active ligament tensioning and predictive laxity throughout range of motion.

Robot-Assisted Soft-Tissue Balancing During Total Knee Arthroplasty
Gloria S. Coden, BA, Bronx, NY
Nipun Sodhi, BA, New York, NY
Tara Moore, BA, MSc, New York, NY
Jenny Zhang, BA, Great Neck, NY
Kristina Dushaj, MA, New York, NY
Michael A. Mont, MD, New York, NY
Matthew S. Hepinstall, MD, New York, NY

This video demonstrates that robot-assisted total knee arthroplasty is safe and effective, with outcomes comparable to, if not superior than, those of manually instrumented total knee arthroplasty.

FOOT AND ANKLE

Modified Grice-Green Subtalar Arthrodesis in Adults With Flatfoot
Cesare Faldini, MD, PhD, Bologna, Italy
Giuseppe Geraci, MD, Bologna, Italy
Antonio Mazzotti, MD, Bologna, Italy
Alessandro Panciera, MD, Dimaro Folgarida, Italy
Fabrizio Perma, MD, Bologna, Italy
Niccolò Stefanini, MD, Bologna, Italy
Francesco Pardo, MD, Bologna, Italy
Federico Pilla, MD, Bologna, Italy
Alberto Ruffilli, MD, PhD, Bologna, Italy

This video presents the surgical technique for and evaluates the results of modified Grice-Green subtalar arthrodesis in 109 consecutive adults with flatfoot.

All-Arthroscopic Excision of Talocalcaneal Coalitions
Dominic S. Carreira, MD, Atlanta, GA
Brendan Emmons, BS, Atlanta, GA

This video presents a technique for all-arthroscopic excision of a talocalcaneal coalition via a posterior approach.

Satisfaction Analysis of Figure 8 (Open Heel) Short Leg Casts
Chan Kang, MD, PhD, Daejeon, Korea, Republic of
Gi Soo Lee, Daejeon, Korea, Republic of
Jeong-Kil Lee, MD, Daejeon, Korea, Republic of
Dong Yeol Kim, MD, Daejeon, Korea, Republic of
Gangwon Seo, Daejeon, Korea, Republic of

This video reports the results of figure 8 (open heel) short leg casts in patients with foot and ankle trauma or disease who require a short leg cast.

Lateral Talar Dome Osteochondral Allograft Transplantation via Fibular Osteotomy
Matthew Gotlin, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Isabella B. Jazrawi, Purchase, NY
Nirmal C. Tejwani, New York, NY

This video provides the case presentation and overview of a patient with a lateral talar dome osteochondral lesion who underwent osteochondral allograft transplantation via a fibular osteotomy.

Ultrasonography-Guided Plantar Fascia Release With a Needle: A Novel and Closed Surgical Procedure
Alvaro Iborra, DPM, PhD, Madrid, Spain
Manuel Villanueva, MD, PhD, Madrid, Spain

Ultrasonography-guided plantar fasciotomy using multiple perforations with a needle is associated with reduced risks and complications, decreased hospital costs, and accelerated patient recovery.

Percutaneous Achilles Tendon Repair
Kevin R. Stone, MD, San Francisco, CA

Dr. Kevin R. Stone demonstrates the percutaneous suture repair technique, which is an effective treatment option for management of a ruptured Achilles tendon in patients who have the goal of returning to sports activity.

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Management of Footdrop via Free Gracilis Grafting and Peroneus Longus Tendon Transfer
Anthony P. Gualtieri, BS, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Jamie P. Levine, MD, New York, NY
Alice Chu, MD, Livingston, NJ
This video demonstrates a postinfectious footdrop caused by selective functional loss of muscle groups innervated by the deep peroneal nerve that was managed via peroneus longus tendon transfer to restore dorsiflexion.

Acute Syndesmotic Stabilization via a Continuous-Loop, Double Cortical Button System
Theodore S. Wolfson, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Steven Struhl, MD, New York, NY
This video is a case-based review of acute distal tibiofibular syndesmotic fixation via a continuous-loop, double cortical button system.

Surgical Correction of Neglected Equinovarus Neuromuscular Clubfoot via Modified Medial Plantar Release and Osteotomy of the Cuneiform
Alessandro Faldini, MD, Pisa, Italy
Vincenzo Consoli, MD, Pisa, Italy
Giuseppe Maffei, MD, Pescia, Italy
Antonio Mazzotti, MD, Bologna, Italy
Alessandro Panciera, MD, Dimaro Folgarida, Italy
Fabrizio Perna, MD, Bologna, Italy
Niccolò Stefanini, MD, Bologna, Italy
Giuseppe Geraci, MD, Bologna, Italy
Cesare Faldini, MD, PhD, Bologna, Italy
This video describes neglected equinovarus neuromuscular clubfoot in a 9-year-old patient. The surgical technique shown in this video involves modified plantar release and lengthening of the cuneiform with a bone graft.

Subtalar Arthroscopic Excision of Os Trigonum
George Gendy, MD, Glendale, AZ
Richard D. Ferkel, MD, Van Nuys, CA
Complete excision of symptomatic os trigonum can be performed via an open or arthroscopic procedure. Regardless of the method selected, complete excision is essential to increase the likelihood of symptomatic relief.

Syndesmotic Injuries: Physical Examination, Diagnosis, and Arthroscopic-Assisted Reduction
Jeffrey L. Wake, ATC, BS, Chino, CA
Kevin D. Martin, DO, Fountain, CO
This video demonstrates the diagnostic examinations for and arthroscopic-assisted reduction in patients with a syndesmotic injury.

Osteochondral Lesions of the Talus Managed via Particulated Juvenile Articular Cartilage
Kevin D. Martin, DO, Fountain, CO
Jeffrey L. Wake, ATC, BS, Chino, CA
Preston Van Buren, DO, San Diego, CA
This video demonstrates the management of osteochondral lesions of the talus via arthroscopic juvenile allograft cartilage at the defect site.

Medial Ankle Instability
Benjamin Lindsey, MD, Ann Arbor, MI
Matthew Pigott, MD, La Jolla, CA
James R. Holmes, MD, Ann Arbor, MI
David M. Walton, MD, Dexte, MI
Paul Talusan, MD, Ann Arbor, MI
This video provides an overview of medial ankle instability and discusses a technique for open deltoid ligament repair with augmentation using suture tape.

Current Concepts in the Management of Advanced/End-Stage Hallux Rigidus
Timothy Charlton, MD, Los Angeles, CA
Tyler Gonzalez, MD, Cary, NC
David B. Thordarson, MD, Los Angeles, CA
This video discusses the most current treatment options for management of advanced/end-stage hallux rigidus.

Limited Palmar and Digital Dermofasciectomy for Management of Recurrent Dupuytren Disease
Lauren Karbach, MD, Rochester, NY
Mark Schreck, MD, Rochester, NY
Warren C. Hammert, MD, Rochester, NY
We discuss the relevant basic science and anatomy associated with Dupuytren disease and demonstrate management of recurrent Dupuytren disease via palmar and digital dermofasciectomy.

Distal Radius Fractures: Radiographic Anatomy and Manual Reduction Techniques
Stephen A. Kennedy, MD, FRCSC, Seattle, WA
Anthony Yi, MD, Seattle, WA
Arien L. Cherones, Seattle, WA
This video discusses the radiographic anatomy related to distal radius fractures in adults, techniques for obtaining accurate imaging studies, and basics of manual reduction techniques.

Surgical Correction of Finger Malrotation Secondary to Proximal Phalanx Malunion
Kanu S. Goyal, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH
We present a surgical technique for correcting a malrotated finger secondary to a proximal phalanx malunion.
Dorsal Approach for Dorsally Impacted Distal Radius Fractures: Visualization, Reduction, and Fixation Made Simple
Abhishek Julka, MD, Grandview Heights, OH
Austin J. Roebke, BS, Columbus, OH
Garrhett G. Via, BS, Columbus, OH

This video shows surgical correction of a distal radius fracture with dorsal articular surface impaction via a dorsal approach. Various aspects of the procedure are discussed.

Wide-Awake Endoscopic Carpal Tunnel Release
Hisham Awan, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH
Garrhett G. Via, BS, Columbus, OH

This video shows endoscopic carpal tunnel release in a patient who is wide awake. Various aspects of the procedure are discussed.

Carpometacarpal Arthroplasty Using Abductor Pollicis Longus Suspension
Hisham Awan, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH
Garrhett G. Via, BS, Columbus, OH

This video shows carpometacarpal arthroplasty using abductor pollicis longus suspension. Various aspects of the procedure are discussed.

Excision of a Ganglion Cyst From the Guyon Canal
Sonu A. Jain, MD, Columbus, OH
Kanu S. Goyal, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH
Garrhett G. Via, BS, Columbus, OH

This video shows removal of a ganglion cyst from the Guyon canal in a patient with symptoms of ulnar nerve compression. Various aspects of the procedure are discussed.

Pediatric Phalangeal Neck Osteotomy for Management of Malunion
Brandon Shulman, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Alice Chu, MD, Livingston, NJ

This video demonstrates a case presentation and overview of phalangeal neck osteotomy for management of a phalangeal neck malunion.

Flexor Digitorum Superficialis and Flexor Digitorum Profundus Tendon Lengthening in Adults With Acquired Spasticity of the Hand
Victor Hoang, DO, Las Vegas, NV
Alan J. Micev, MD, Las Vegas, NV

Cerebrovascular accidents often result in considerable pathology. Spastic hand deformity is successfully managed via flexor digitorum superficialis and flexor digitorum profundus tendon lengthening.

Trapeziectomy With Suture Anchor Suspensionplasty: A Novel Technique
Abhishek Julka, MD, Grandview Heights, OH
Garrhett G. Via, BS, Columbus, OH
Austin J. Roebke, BS, Columbus, OH

This video highlights the technical aspects of trapeziectomy with suture anchor suspensionplasty. Indications, contraindications, technical pearls, and potential pitfalls are discussed.

Percutaneous Bone Grafting for Management of Scaphoid Nonunion
Hisham Awan, MD, Columbus, OH
Joe A. Rosenbaum, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH

This video demonstrates a case presentation of percutaneous distal radius bone grafting for management of a scaphoid nonunion.

Dorsal Approach for Scaphoid Nonunion Fixation With Distal Radius Bone Graft
Hisham Awan, MD, Columbus, OH
Joe A. Rosenbaum, MD, Columbus, OH
Austin J. Roebke, BS, Columbus, OH

This video shows open reduction and internal fixation with distal radius bone graft for management of a scaphoid nonunion. A dorsal approach to the scaphoid and distal radius is used.

Dorsal Wrist Anatomy
Adnan Prsic, MD, Seattle, WA
Michael Galvez, MD, Seattle, WA
Joshua A. Gordon, MD, San Francisco, CA
Arien L. Cherones, Seattle, WA
Jerry I. Huang, MD, Seattle, WA

A good grasp of anatomy is a key to success as an orthopaedic surgeon. This video shows major anatomic landmarks in the dorsal wrist.

Trapeziectomy With Ligament Reconstruction and Tendon Interposition for Management of Thumb Carpometacarpal Joint Arthritis
Mark Schreck, MD, Rochester, NY
David Ciufio, MD, Rochester, NY
Warren C. Hammert, MD, Rochester, NY

This video reviews the anatomy of the carpometacarpal joint of the thumb and discusses the surgical technique for, complications of, and outcomes of trapeziectomy with ligament reconstruction and tendon interposition.

Camitz Opponensplasty
Randipsingh R. Bindra, FRACS, FRCS, MD, Bundall, Australia
Wasim Awan, Southport, Australia

Camitz opponensplasty is a useful technique that restores thumb opposition in patients with severe carpal tunnel syndrome by transferring the palmaris longus tendon to the abductor pollicis brevis insertion.

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Endoscopic Carpal Tunnel Release
Mark Schreck, MD, Rochester, NY
David Ciuffo, MD, Rochester, NY
Warren C. Hammert, MD, Rochester, NY
This video reviews carpal tunnel syndrome, including pertinent anatomy, patient evaluation, treatment options, and outcomes, and demonstrates endoscopic carpal tunnel release.

Three-Corner Fusion for Management of Complex Perilunate Fracture-Dischlocations
Graeme D. Matthewson, MD, Winnipeg, Canada
Tanner Gurney-Dunlop, MD, Regina, Canada
Todd Clark, MD, Winnipeg, Canada
This video demonstrates three-corner fusion in a patient with a perilunate fracture-dislocation.

Ulnar-Sided Hand and Wrist Anatomy
Michael Galvez, MD, Seattle, WA
Adnan Prsic, MD, Seattle, WA
Joshua A. Gordon, MD, Philadelphia, PA
Arien L. Cherones, Seattle, WA
Jerry I. Huang, MD, Seattle, WA
This video shows the major ulnar-sided anatomic landmarks in the hand and wrist.

Hydroxyapatite Pin Cannulation for Management of Simple Bone Cysts
Norio Yamamoto, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Hirotaka Yonezawa, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Toshiharu Shirai, MD, Kyoto, Japan
Simple bone cysts are the most common type of benign bone tumors. This video shows the surgical technique for and pitfalls of hydroxyapatite pin cannulation of a simple bone cyst.

Arthroscopic Removal of Rice Bodies From the Shoulder
Anthony P. Gualtieri, BS, MD, New York, NY
Olwadamilola Kolade, Brooklyn, NY
Dylan T. Lowe, MD, New York, NY
Mandeep Virk, MD, New York, NY
This video demonstrates arthroscopic removal of rice bodies from the glenohumeral joint and reviews the pathogenesis, clinical presentation, imaging studies, and management of rice bodies in the shoulder.

Radical Resection of Parosteal Osteosarcoma of the Proximal Tibia
Rohan Sampat, Hackensack, NJ
Brianna Wittig, Hackensack, NJ
Laura Sonnylal, BS, Hackensack, NJ
Ian O’Connor, BS, Hackensack, NJ
Tyler Hoskins, Hackensack, NJ
James C. Wittig, MD, Morristown, NJ
This video describes the clinical presentation, imaging studies, and prognosis of parosteal osteosarcoma of the proximal tibia and discusses the technique for radical resection of a parosteal osteosarcoma of the proximal tibia.

Resection and Reconstruction of a Large Giant Cell Tumor of the Distal Radius Performed in Haiti
Scott C. Nelson, MD, Loma Linda, CA
John W. Durham, MD, Flagstaff, AZ
Robert C. Vercio, MD, Loma Linda, CA
Jonathan Creech, MD, Loma Linda, CA
Lee M. Zuckerman, MD, San Marino, CA
This video discusses the case presentation of a 23-year-old woman with a large, fungating giant cell tumor of the distal radius who underwent resection and reconstruction with centralization of the ulna, which was performed in Haiti.

Radical Resection of the Left Scapula in Patients With Dedifferentiated Chondrosarcoma
Rohan Sampat, Hackensack, NJ
Tyler Hoskins, Hackensack, NJ
Laura Sonnylal, BS, Hackensack, NJ
James C. Wittig, MD, Montclair, NJ
This video describes the clinical presentation, imaging studies, and prognosis of scapular dedifferentiated chondrosarcoma and discusses the technique for radical resection of a dedifferentiated chondrosarcoma of the scapula.

Sacral Resection
Martin Thaler, MD, MSc, Innsbruck, Austria
Michael M. Nogler, MD, Innsbruck, Austria
Hannes Stofferin, MD, Innsbruck, Austria
This video demonstrates a technique sufficient for partial sacrectomy in patients with a malignant sacral tumor.

Open Anterior Approach to the Middle and Lower Thoracic Spine
Cosma Calderaro, MD, Rome, Italy
Jocelyn T. Compton, MD, MSc, Iowa City, IA
Luca Labianca, MD, Rome, Italy
Kazuta Yamashita, MD, Tokushima, Japan
Piyush Kakalot, MBBS, MD, Iowa City, IA
Stuart L. Weinstein, MD, Iowa City, IA
Severe spine deformities often require correction in multiple planes. An anterior release of the spine may be an adjunctive procedure necessary for the management of severe and rigid deformities.

Guided Growth for the Treatment of Patients with Lateral Collateral Ligament Laxity and Blount Disease
Ahmed Emara, Cairo, Egypt
Khaleed M. Emara, MD, Cairo, Egypt
Mahmoud A. Elshobaky, MBCHB, Cairo, Egypt
Guided growth via percutaneous screw epiphyseodesis of the tibial and fibular growth plates corrects deformity and ligamentous laxity in pediatric patients with Blount disease.
Hip Reconstruction in Patients with Cerebral Palsy  
Karim Z. Masrouha, MD, New York, NY  
Kartik Shenoy, MD, New York, NY  
Dylan T. Lowe, MD, New York, NY  
Mara Karamitopoulos, MD, Brooklyn, NY  

This video discusses the case presentation of a child with spastic quadriplegia cerebral palsy and a subluxed hip who underwent hip reconstruction via pelvic and femoral osteotomies, resulting in excellent postoperative outcomes.

Submuscular Bridge Plating for Management of Pediatric Femur Fractures  
Amr A. Abdelgawad, MD, El Paso, TX  
Ahmed Elabd, MD, El Paso, TX  
Isaac Fernandez, MD, El Paso, TX  
Ahmed Thabet Hagag, MD, El Paso, TX  
Enes M. Kanlic, MD, Chandler, AZ  

Submuscular bridge plating affords reliable fixation and healing for complex pediatric femur fractures and may have a broader application in orthopaedics.

Carpal Tunnel Syndrome in Children With Mucopolysaccharidosis: Pathogenesis, Diagnosis, and Management  
Michael T. Milone, MD, New York, NY  
Dylan T. Lowe, MD, New York, NY  
Alice Chu, MD, Livingston, NJ  

This video provides a case presentation and overview of bilateral carpal tunnel syndrome in a patient with type VI mucopolysaccharidosis.

Shoulder and Elbow

Arthroscopy-Guided Latarjet Procedure With Suture-Button Fixation as a Safe and Reliable Alternative to Screw Fixation  
Pascal Boileau, MD, Nice, France  

A guided surgical approach for the arthroscopic Latarjet procedure optimizes graft positioning, and suture-button fixation is a safe and reliable alternative to screw fixation.

Rotator Cuff Repair in the Lateral Decubitus Position  
Brandon Erickson, MD, New York, NY  
Scott W. Trenhaile, MD, Rockford, IL  

The lateral decubitus position is a safe and easy alternative to the beach-chair position for rotator cuff repair.

Anatomic Transosseous Suture Fixation of the Distal Biceps Tendon Using a Single-Incision Approach  
Elaine Tran, MD, Albany, NY  
Khusboo Desai, MD, Albany, NY  
Shazaan Hushmendy, MD, Albany, NY  
Andrew S. Morse, MD, Slingerlands, NY  

The distal biceps tendon can be repaired many ways. This video shows anatomic reconstruction via a single-incision anterior approach.

Mini-Incision Ulnar Nerve Decompression  
Hisham Awan, MD, Columbus, OH  
Austin J. Roebrke, BS, Columbus, OH  
Garrnett G. Via, BS, Columbus, OH  

We present the technique for mini-incision ulnar nerve decompression. Various aspects of the procedure are discussed.

Anterior Intramuscular Ulnar Nerve Transfer for Management of Tardy Ulnar Nerve Palsy  
Prashant Chandrakant Kamble, MS, Mumbai, India  
Shubhanshu S. Mohanty, FACS, FRCS, MBBS, MS, Mumbai, India  
Tushar N. Rathod, ACNP-BC, ATC, BA, BOC, BOCP, BS, Mumbai, India  
Vinayak B. Garje, MBBS, MS, Mumbai, India  

Cubitus valgus secondary to lateral humeral condyle nonunion may contribute to ulnar nerve palsy, which can be managed via anterior submuscular transfer of the ulnar nerve without addressing the lateral humeral condyle nonunion.

Latissimus Dorsi Transfer for Management of Irreparable Subscapularis Tendon Tears  
Alvaro Vanegas, MD, Medellin, Colombia  
Lorena Bejarano-Pineda, MD, Durham, NC  
Ken Kadowaki, MD, Medellin, Colombia  
Francisco Javier Monsalve, MD, Medellin, Colombia  
Andres C. Londono, MD, Medellin, Colombia  
Santiago Vanegas-Alzate, MD, Medellin, Colombia  
William H. Marquez, MD, Medellin, Colombia  

Irreparable subscapularis tendon tears are uncommon rotator cuff injuries that are difficult manage. Latissimus dorsi transfer is an effective procedure for the management of irreparable subscapularis tears.

Open Quadrilateral Space Decompression  
Andrew J. Clair, MD, New York, NY  
Dylan T. Lowe, MD, New York, NY  
Robert J. Meislin, MD, New York, NY  
Mandeep Virk, MD, New York City, NY  

This video provides a case presentation and overview of quadrilateral space decompression via a posterior approach for management of quadrilateral space compression syndrome.

Anterior Sternoclavicular Joint Reconstruction With Hamstring Allograft  
Devin Ganesh, MD, Orlando, FL  
Winston J. Warme, MD, Bellevue, WA  
Arien L. Cherones, Seattle, WA  

This video discusses the case presentation of a 17-year-old girl with ligamentous laxity and describes the approach for sternoclavicular joint reconstruction with an allograft.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Femoral Allograft-Prosthesis Composite in Reverse Total Shoulder Arthroplasty: A Revision Procedure for Failed Arthroplasty
Jason S. Klein, MD, Dallas, TX
Tyler M. Bauer, BA, BS, Northampton, PA
John G. Horneff, MD, Philadelphia, PA
Mark D. Lazarus, MD, Philadelphia, PA

This video discusses the results of our case series on the use of an allograft-prosthesis composite in combination with revision reverse total shoulder arthroplasty to manage massive proximal humeral bone loss.

Hamstring Autograft Reconstruction for Management of Irreducible Anterior Sternoclavicular Joint Dislocations
Theodore S. Wolfson, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Isabella B. Jazrawi, Purchase, NY
Costas Bizekis, ACNP-BC, ATC, BA, BS, New York, NY
Young W. Kwon, MD, PhD, New York, NY

This video provides a case presentation and overview of sternoclavicular joint reconstruction via a hamstring autograft for management of an irreducible anterior sternoclavicular joint dislocation.

Internal Fixation of Os Acromiale via Cannulated Screws and Tension Band Wiring
Shalen Kouk, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY

This video is a case-based review and surgical technique guide for os acromiale fixation with the use of cannulated screws and tension band wiring.

Latissimus Dorsi Transfer for Management of Irreparable Subscapularis Tendon Tears
Chang H. Baek, MD, Yeosu, Korea, Republic of
Young Woong Bang, MD, Yeosu, Korea, Republic of
Jong Soo Oh, MD, Goyang-Si, Korea, Republic of
Seung Hoon Yi, Yeosu-Si, Korea, Republic of

Latissimus dorsi transfer results in pain relief and restores shoulder range of motion and function. Latissimus dorsi transfer is an effective and safe salvage treatment option for patients with an irreparable subscapularis tear.

Surgical Management of Traumatic Anterior Shoulder Instability via Tricortical Cryopreserved Iliac Crest Allograft
Mikhail Zusmanovich, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Young W. Kwon, MD, PhD, New York, NY

This video discusses the case presentation of a patient with anterior shoulder instability and 30% glenoid bone loss who underwent surgical restoration of glenoid bone stock with the use of tricortical cryopreserved allograft.

Remplissage Procedure for Management of Hill-Sachs Lesions
Anthony P. Trenga, MD, Gurnee, IL
Vandan Patel, MD, Ann Arbor, MI
Stephen F. Brockmeier, MD, Charlotteville, VA

This video demonstrates our technique, postoperative management, and technical pearls for arthroscopic remplissage for the management of Hill-Sachs lesions and recurrent shoulder instability.

Two-Camera Technique for Partial-Thickness Articular-Sided Rotator Cuff Repair
Lawrence S. Miller, MD, Camden, NJ
Leonardo M. Cavinatto, MD, Birmingham, MI

This video demonstrates a technique in which two cameras (one in the articular space and one in the subacromial space) are simultaneously used for anatomic rotator cuff repair.

Radial Head Replacement
Kyle A. Petersen, MD, Akron, OH
Craig A. Siesel, MD, Cuyahoga Falls, OH
Eric T. Miller, MD, Akron, OH

This video demonstrates radial head replacement for the management of a three-part radial head fracture. A step-by-step guide with pertinent anatomy and pitfalls is presented.

Open Reduction and Internal Fixation of Distal Humerus Fractures
Eliseo DiPrinzio, MD, New York, NY
Andy Chang, MD, New York, NY
Michael R. Hausman, MD, New York, NY
Jae-Hon M. Kim, MD, Demarest, NJ

This video demonstrates open reduction and internal fixation of distal humerus fractures, with attention paid to those with articular comminution.

Management of a Type B2 Glenoid During Shoulder Arthroplasty
Laurent B. Willemort, MD, Bruges, Belgium
Olivier Verborgt, MD, PhD, Wilrijk, Belgium

This video discusses various arthroplasty options for the management of a type B2 glenoid and demonstrates total shoulder arthroplasty using freehand correction.

Reverse Shoulder Arthroplasty and Bone Grafting for Management of Vault Deficiency
Hafiz Kassam, MD, Yuba City, CA
Jacob E. Berman, MBA, New Haven, CT
Theodore A. Blaine, MD, Farmington, CT
David Kovacevic, MD, New Haven, CT

This video demonstrates the technique for bone grafting a massively deficient glenoid vault during reverse total shoulder arthroplasty, which restores bony anatomy, successfully relieves pain, and restores functional motion.
The Elbow Latarjet Procedure
Davide Blonna, MD, Turin, Italy
Valentina Greco, Turin, Italy
Francesco Caranzano, MD, Turin, Italy
Roberto Rossi, MD, Turin, Italy

This video demonstrates management of chronic elbow dislocation, which is useful in patients with a neglected terrible triad injury. The technique includes three steps and is a salvage procedure for the management of complex cases.

Double-Layer Repair of Delaminated Posterosuperior Rotator Cuff Tears
Pascal Boileau, MD, Nice, France
Adam S. Wilson, MD, Steamboat Springs, CO
Nathalie Pireau, Woluwe-saint-Lambert, Belgium
Jarret M. Woodmass, MD, Calgary, Canada
Olivier van der Meijden, MD, PhD, Nice, France

Double-anatomic repair of a delaminated posterosuperior rotator cuff tear incorporates a lasso-loop technique medially for the deep layer and a tension-band technique laterally for the superficial layer.

Median Nerve Exploration
Jacques H. Hacquebord, MD, New York, NY
Shreya Veera, BS, Indianapolis, IN

This video discusses the management of severe median nerve neuropathy via median nerve exploration and subsequent release of all median nerve constriction points in the proximal forearm.

Reverse Total Shoulder Arthroplasty With the Use of Navigation
Pierre-Henri Flurin, MD, Merignac, France

This video demonstrates the preoperative planning software and navigation system for reverse total shoulder arthroplasty.

Computer-Assisted Reverse Shoulder Arthroplasty and Glenoid Bone Grafting for Management of Severe Glenoid Retroversion
Mandeep Virk, MD, New York, NY
David H. Mai, MD, MPH, New York, NY
Dylan T. Lowe, MD, New York, NY
Oluwadamilola Kolade, Brooklyn, NY
Joseph D. Zuckerman, MD, New York, NY

This video is a case-based demonstration of the preoperative planning and the surgical technique for computer-assisted reverse shoulder arthroplasty and glenoid bone grafting for management of severe posterior glenoid wear.

Free-Functioning Muscle Transfer for Management of Elbow Flexion
Jacques H. Hacquebord, MD, New York, NY
Jamie P. Levine, MD, New York, NY
Shreya Veera, BS, Indianapolis, IN

This video discusses the indications and techniques for free-functioning muscle transfer in patients with a traumatic brachial plexus injury in whom nerve transfers for elbow flexion have failed.

Management of Extraforaminal Disk Herniation via Minimally Invasive Articular Process-Sparing Lateral Laminectomy
Cesare Faldini, MD, PhD, Bologna, Italy
Fabrizio Perna, MD, Bologna, Italy
Antonio Mazzotti, MD, Bologna, Italy
Giuseppe Geraci, MD, Bologna, Italy
Francesco Pardo, MD, Bologna, Italy
Alessandro Panciera, MD, Dimaro Folgarida, Italy
Alberto Ruffilli, MD, PhD, Bologna, Italy
Alberto C. Di Martino, MD, PhD, Rome, Italy
Francesco Traina, MD, PhD, Bologna, Italy

This video shows the surgical procedure for extraforaminal lumbar disk herniation using high-definition intraoperative footage and anatomic tables.

Intradural Lumbar Disk Herniation and Cauda Equina Syndrome
Rivka C. Ihejirika, MD, New York, NY
Karan Patel, MD, New York, NY
Edward M. Delsole, MD, Philadelphia, PA
Themistocles S. Protopsaltis, MD, New York, NY

This video reviews the etiology, presentation, diagnostic evaluation, and management of intradural lumbar disk herniation and discusses a case presentation.

Cervical Disk Arthroplasty: Surgical Technique and Technical Pearls
Andre Samuel, MD, New York, NY
Sheeraz Qureshi, MD, New York, NY

Cervical disk arthroplasty is associated with better outcomes than two-level anterior cervical diskectomy and fusion. This video reviews several key differences between the two procedures.

Arthroscopic Cervical Foraminotomy and Diskectomy
Hwang Jin Ho, MD, PhD, Seoul, Korea, Republic of
In Seok Son, Seoul, Korea, Republic of
Min Seok Kang, Seoul, Korea, Republic of
Tae-Hoon Kim, MD, Seoul, Korea, Republic of

Arthroscopic cervical foraminotomy is a new surgical technique that is an alternative to other minimally invasive procedures.

Proximal Hamstring Tears: From Anatomy to Surgical Repair
William H. Marquez, MD, Medellin, Colombia
Juan C. Gomez Hoyos, MD, Dallas, TX
Luis P. Carro, MD, Cantabria, Spain
Rafael Arriaza Loureda, MD, Perillo, Spain
Bernardo Aguileria, MD, Cali, Colombia
Lorena Bejarano-Pineda, MD, Medellin, Colombia
Sheeraz Qureshi, MD, Medellin, Colombia

Proximal hamstring rupture from the ischial tuberosity occurs acutely during high-speed activities. Surgical repair of proximal hamstring tears results in subjective highly satisfactory outcomes.
Fixation of Fibular Head Avulsion Fractures With a Proximal Tibiofibular Screw
Ryan Paul, MD, Toronto, Canada
Daniel Whelan, MD, Toronto, Canada
Ryan Khan, Toronto, Canada
This video describes a novel fixation technique and discusses a case series of fibular head avulsion fractures. Our technique stabilizes the posterolateral ligament complex and facilitates early range of motion.

Ultrasonography-Guided Intra-articular Injection of the Hip
Brendan Emmons, BS, Atlanta, GA
Dominic S. Carreira, MD, Atlanta, GA
This video provides a detailed overview of ultrasonography-guided intra-articular injection of the hip.

ABCs for Starting Hip Arthroscopy
Manish Mehta, Warren, OH
Thomas S. Lynch, MD, New York, NY
This video discusses preoperative planning and operating room management approaches for hip arthroscopy, emphasizing specific techniques to facilitate surgery, avoid common pitfalls, and optimize patient outcomes.

Arthroscopic Excision of Hip Heterotopic Ossification
Michael J. Moses, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Robert J. Meislin, MD, New York, NY
This video provides a case presentation and overview of arthroscopic excision of heterotopic ossification of the hip.

Lateral Hemi-Tibial Plateau Allograft Transplantation and Distal Femoral Varus Osteotomy for Management of Tibial Plateau Fractures With Lateral Meniscal Loss
Mikhail Zusmanovich, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Robert J. Meislin, MD, New York, NY
This video discusses the case presentation of a patient with a chronic lateral hemi-tibial plateau fracture who underwent hemi-tibial plateau allograft transplantation and a distal femoral osteotomy.

Surgical Management of Fifth Metatarsal (Jones) Fractures via Intramedullary Screw Fixation
Benjamin Kester, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY
This video provides a review of the literature, a case presentation, and overview of the surgical technique for cannulated screw fixation of proximal fifth metatarsal (Jones) fractures.

Open Repair of the Flexor Pronator Tendon for Management of Recalcitrant Medial Epicondylitis
Julian Sonnenfeld, MD, New York, NY
David Trofa, MD, Charlotte, NC
Matthew J. Anderson, MD, New York, NY
George Popa, Fort Lee, NJ
Michael Constant, New York, NY
Christopher S. Ahmad, MD, New York, NY
This video demonstrates open débridement and repair of the flexor pronator tendon for management of recalcitrant medial epicondylitis.

Superficial and Deep Medial Collateral Ligament Reconstruction for Management of Chronic Medial Knee Instability
Mansoo Kim, MD, Seoul, Korea, Republic of
In Jun Koh, MD, PhD, Seoul, Korea, Republic of
Yong In, MD, Seoul, Korea, Republic of
This video demonstrates anatomic reconstruction of the superficial and deep medial collateral ligament via an adjustable loop length suspensory fixation device, which affords good stability and satisfactory outcomes.

Anatomic Single-Bundle Anterior Cruciate Ligament Reconstruction With a Rounded Rectangular Femoral Dilator
Kazuki Asai, MD, Kanazawa, Japan
Junsuke Nakase, MD, Kanazawa, Japan
Takeshi Oshima, MD, Kanazawa, Japan
Yasushi Takata, MD, Kanazawa, Japan
Kengo Shimozaki, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Anterior cruciate ligament reconstruction with a rounded rectangular femoral dilator is simple and addresses the shortcomings of conventional single-bundle anterior cruciate ligament reconstruction.

Chronic Abductor Tendon Tear Reconstruction via a Dermal Allograft
Utkarsh Anil, BA, New York, NY
Dylan T. Lowe, MD, New York, NY
Guillem Gonzalez-Lomas, MD, New York, NY
This video is a review of abductor mechanism insufficiency and a comprehensive surgical technique guide for abductor tendon reconstruction via a dermal allograft.

Arthroscopic Labral Hip Repair and Lesser Trochanter Excision for Management of Ischiofemoral Impingement
Anna Katsman, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Thomas Youm, MD, New York, NY
This video is a case-based overview of ischiofemoral impingement and detailed surgical technique guide for arthroscopic lesser trochanteric resection.
Closed-Loop, Double Cortical Button Technique for Reconstruction of Acute and Chronic Acromioclavicular Joint Dislocations
Theodore S. Wolfson, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Steven Struhl, MD, New York, NY

This video is a case-based review of acromioclavicular joint reconstruction via a continuous-loop, double cortical button technique.

Medial Collateral Ligament Repair via Internal Bracing
Julian Sonnenfeld, MD, New York, NY
David Trofa, MD, Charlotte, NC
Hasani Swindell, MD, New York, NY
George Popa, Fort Lee, NJ
Christopher S. Ahmad, MD, New York, NY

This video demonstrates the use of internal bracing to aid in the healing of a medial collateral ligament tear in combination with anterior cruciate ligament reconstruction.

Medial Meniscal Repair and Concomitant Anterior Cruciate Ligament Reconstruction
Julian Sonnenfeld, MD, New York, NY
David Trofa, MD, Charlotte, NC
Forrest Anderson, MD, New York, NY
George Popa, Fort Lee, NJ
Christopher S. Ahmad, MD, New York, NY

This video demonstrates repair of a medial meniscal tear, in combination with anterior cruciate ligament reconstruction, via all-inside and outside-in repair techniques.

Primary Repair of Chronic Pectoralis Major Tears With Retraction
Mikhail Zusmanovich, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Guillem Gonzalez-Lomas, MD, New York, NY

This video reviews pectoralis major tears and discusses the case presentation of a patient with a chronic pectoralis major tear with retraction who underwent primary repair.

Gluteus Maximus Tendon Transfer for Management of Primary Abductor Insufficiency
Tyler Luttringer, MD, New York, NY
Samuel Baron, Danbury, CT
Dylan T. Lowe, MD, New York, NY
Thomas Youm, MD, New York, NY

This video discusses the case presentation of a patient with primary abductor insufficiency as a result of a chronic gluteus medius tendon tear and abductor fatty atrophy who underwent gluteus maximus tendon transfer.

Surgical Anatomy of Segond Fractures
Daniele Mazza, MD, Rome, Italy
Edoardo Monaco, MD, Rome, Italy
Andrea Redler, MD, Rome, Italy
Cosma Calderaro, MD, Rome, Italy
Lorenzo Proietti, MD, Rome, Italy
Megan R. Wolf, MD, Rocky Hill, CT
Andrea Ferretti, MD, Rome, Italy

This video demonstrates that careful dissection of Segond fractures revealed a discernible attachment of the anterolateral capsule to the bony injury in all patients.

Anterolateral Ligament Repair via Augmentation
Edoardo Monaco, MD, Rome, Italy
Daniele Mazza, MD, Rome, Italy
Andrea Redler, MD, Rome, Italy
Cosma Calderaro, MD, Rome, Italy
Lorenzo Proietti, MD, Rome, Italy
Megan R. Wolf, MD, Rocky Hill, CT
Andrea Ferretti, MD, Rome, Italy

This video presents a new technique for anterolateral ligament repair via augmentation. Repair of the anterolateral ligament via augmentation may allow for faster rehabilitation, protecting the graft during healing.

Arthroscopic Reduction and Fixation for Management of Posterior Cruciate Ligament Avulsion Fractures
Sung-Jae Kim, MD, Seoul, Korea, Republic of
Min Jung, MD, Seoul, Korea, Republic of
Woosik Jung, Seoul, Korea, Republic of
Jungsuk Kim, Seoul, Korea, Republic of
Kwangho Chung, MD, Seoul, Korea, Republic of
Jinyoung Jang, MD, Seoul, Korea, Republic of
Su Keon A. Lee, MD, Seoul, Korea, Republic of

This video demonstrates arthroscopic reduction and fixation via the pullout technique for the management of posterior cruciate ligament avulsion fractures. This technique affords good reduction and satisfactory stability.

Closing Wedge Distal Femoral Osteotomy for Management of Recurrent Patellar Dislocation and Genu Valgum
Byung Hoon Lee, MD, Seoul, Korea, Republic of
Nha Kyungwook, MD, PhD, Ilsanseoegu, Korea, Republic of

Closing wedge distal femoral osteotomy proved to be effective and safe at a minimum follow-up of 2 years and may be considered a viable treatment option for patients with recurrent patellar dislocation and genu valgum.

Tibial Tubercle Anteromedialization and Distalization and Arthroscopic Lateral Release for Management of Patella Alta and Lateral Tilt
Matthew Gotlin, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY

This video is a case-based review and surgical technique guide for the management of patellar instability in patients with patella alta and lateral tilt.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Revision Anterior Cruciate Ligament Reconstruction via Quadriceps Tendon Autograft and Anterolateral Ligament Reconstruction
Julian Sonnenfeld, MD, New York, NY
David Trofa, MD, Charlotte, NC
Joseph Lombardi, MD, New York, NY
Forrest Anderson, MD, New York, NY
George Popa, Fort Lee, NJ
Christopher S. Ahmad, MD, New York, NY

This video demonstrates the surgical technique for revision anterior cruciate ligament reconstruction via a quadriceps tendon autograft with concomitant anterolateral ligament reconstruction.

Proximal Biceps Tendon Reconstruction via Achilles Tendon Allograft
Utkarsh Anil, BA, New York, NY
Samuel Baron, Danbury, CT
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY

This video demonstrates proximal biceps tendon reconstruction via Achilles tendon allograft for the management of a proximal biceps tendon rupture with distal retraction.

Single-Stage Multiligament Reconstruction of Chronic Anterior Cruciate Ligament, Posterior Cruciate Ligament, and Medial Collateral Ligament Injuries
Dylan T. Lowe, MD, New York, NY
Michael J. Alaia, MD, New York, NY

This video is a case-based demonstration of single-stage reconstruction of a chronic multiligament knee injury of the anterior cruciate ligament, posterior cruciate ligament, and medial collateral ligament.

Anterior Cruciate Ligament Reconstruction via Quadriceps Autograft and Lateral Extra-articular Tenodesis in Skeletally Immature Athletes
Seth Sherman, MD, Columbia, MO
John Welsh, BA Columbia, MO
Joseph Rund, BS, Columbia, MO

This video discusses a skeletally immature athlete with an anterior cruciate ligament tear who underwent anterior cruciate ligament reconstruction via a quadriceps autograft followed by lateral extra-articular tenodesis.

Avoiding Femoral Tunnel Convergence During Single-Bundle Anterior Cruciate Ligament and Fibular Collateral Ligament Reconstruction
Mitchell I. Kennedy, BS, Vail, CO
Alexander Kuczmarski, MSc, Vail, CO
Buru Gilbert Moatshe, MD, PhD, Oslo, Norway
Jorge Chahla, MD, PhD, Chicago, IL
Robert F. LaPrade, MD, PhD, Avon, CO

Femoral tunnel convergence can be avoided during anterior cruciate ligament and fibular collateral ligament anatomical reconstruction by orienting the fibular collateral ligament femoral tunnel 35° to 40° anterior from neutral.

Fresh Osteochondral Allograft for Management of Osteochondral Defects of the Knee
Nimit A. Patel, MD, Philadelphia, PA
Vahe Varzhapetyan, MD, Van Nuys, CA
Christopher Dodson, MD, Philadelphia, PA
Kevin B. Freedman, MD, Bryn Mawr, PA

This video discusses the use of fresh allograft for the management of osteochondral defects of the knee. A systematic review of such management shows no difference in outcomes but variances in adverse events.

Reconstruction of Chronic Patellar Tendon Ruptures via Hamstring Autograft
Ahmad Badri, DO, Wayne, NJ
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY

This video is a case-based overview of chronic patellar tendon injuries and provides a detailed depiction of the surgical technique for chronic patellar tendon reconstruction via a hamstring autograft.

Tibial Tubercle Osteotomy and Proximalization for Management of Chronic Patella Baja
Ahmad Badri, DO, Wayne, NJ
Dylan T. Lowe, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY

This video is a case-based review of patella baja and a detailed surgical technique guide for tibial tubercle osteotomy with proximalization.

Osteochondral Allograft Transplantation for Management of a Massive Osteochondritis Dissecans Lesion of the Medial Femoral Condyle
Seth Sherman, MD, Columbia, MO
Joseph Rund, BS, Columbia, MO
John Welsh, BA, Columbia, MO

This video demonstrates osteochondral allograft transplantation as a salvage procedure for a patient with a massive osteochondritis dissecans lesion of the medial femoral condyle in whom a prior attempt at surgical fixation failed.

Restoration of Patellofemoral Contact Forces via Isolated and Multicompartmental Osteochondral Knee Allografts
Michael G. Baraga, MD, Coral Gables, FL
George Sanchez, BS, Vail, CO
Jose F. Inzunza, MD, North Miami Beach, FL
Anthony Sanchez, BS, Vail, CO
Robert F. LaPrade, MD, PhD, Vail, CO
Matthew T. Provencher, MD CAPT MC USNR, Vail, CO

Given the goal to avoid knee arthroplasty, especially in younger patients with osteochondral lesions, this video discusses relevant osteochondral knee allograft techniques.
ORTHOPAEDIC VIDEO THEATER

Arthroscopic Repair of Posterior Cruciate Ligament Avulsions in Children
Gonzalo Samitier Solis, MD, Madrid, Spain
Alfonso C. Prada, Madrid, Spain
All-arthroscopic posterior cruciate ligament avulsion repair in children involves a posterior transseptal approach; a nonclassic posterior cruciate ligament tibial guide; and a unique, small-diameter tibial tunnel.

Open Tendon Repair Into a Bone Trough for Management of Hip Abductor Tendon Avulsion
Landon Brown, MD, Houston, TX
Kwan Park, MD, Houston, TX
Bradley Lambert, PhD, Missouri City, TX
Derek Bernstein, MD, Philadelphia, PA
Stephen J. Incavo, MD, Houston, TX
This video reviews the anatomy of, imaging studies of, and surgical techniques for repair of large hip abductor tendon tears.

TRAUMA

Terrible Triad Reconstruction
Hisham Awan, MD, Columbus, OH
Joe A. Rosenbaum, MD, Columbus, OH
Kara Colvell, Columbus, OH
Austin J. Roebke, BS, Columbus, OH
We present the technique for terrible triad reconstruction. Indications, contraindications, technical pearls, and potential pitfalls are discussed. Radial head repair with headless screws and lateral collateral ligament reconstruction are performed.

Uniplanar Osteotomy for Multiplanar Femoral Deformity Correction
Suman Medda, MD, Winston Salem, NC
Alexander Jinnah, MD, Winston Salem, NC
Alejandro Marquez-Lara, MD, Winston Salem, NC
Edgar T. Araiza, MD, Dallas, TX
Eben A. Carroll, MD, Winston Salem, NC
This video demonstrates the uniplanar osteotomy technique for correction of a multiplanar femoral deformity. Indications, alternative treatment options, preoperative planning, and surgical technique are discussed.

Open Reduction and Internal Fixation of the Lisfranc Complex
Harmeeth S. Uppal, MD, Anaheim, CA
This video demonstrates the technique for open reduction and internal fixation of a high-energy midfoot fracture-dislocation. The surgical approach and the reduction and fixation strategy are shown.

Unstable Intertrochanteric Hip Repair With a Cephalomedullary Nail
Kenneth A. Egol, MD, New York, NY
Amy Wasterlain, MD, Philadelphia, PA
Adam Driesman, MD, New York, NY
Jessica Mandel, BA, Miami, FL
Sanjit R. Konda, MD, New York, NY
This video demonstrates the technique for repair of an unstable intertrochanteric hip fracture using a cephalomedullary device.

Repair of Distal Femoral Periprosthetic Fracture Nonunion Using a Linked Nail Plate Construct
Kenneth A. Egol, MD, New York, NY
Edward M. Delsole, MD, New York, NY
Jessica Mandel, BA, Miami, FL
Sanjit R. Konda, MD, New York, NY
This video demonstrates the use of a linked nail plate construct with autologous bone graft to repair an atrophic distal femoral periprosthetic fracture nonunion.

Arm Fasciotomy via a Lateral Approach
Toni M. McLaurin, MD, New York, NY
Kurtis D. Carlock, BS, New York, NY
Austin Ramme, MD, PhD, Ann Arbor, MI
Kartik Shenoy, MD, New York, NY
This video describes the case presentation of a patient with acute compartment syndrome of the arm and demonstrates the surgical technique for arm fasciotomy via a lateral approach.

Revision Ankle Fracture and Syndesmosis Fixation via Lengthening Fibular Osteotomy and a Suture-Button Construct
Derek Ju, MD, West Hollywood, CA
Eytan Debbi, MD, PhD, Los Angeles, CA
John Garlich, MD, Los Angeles, CA
Charles Moon, MD, Los Angeles, CA
This video highlights the presentation, diagnosis, and surgical management of fibular and syndesmotic malunions and demonstrates a lengthening fibular osteotomy and syndesmotic fixation with the use of a suture-button construct.

A New Minimally Invasive Anteromedial Approach for Plate Osteosynthesis of Distal Third Humeral Shaft Fractures
Hermenegildo Cañada-Oya, MD, Granada, Spain
Sabina Cañada-Oya, MD, Ricón De La Victoria, Spain
Cristina Zarzuela Jiménez, MD, Granada, Spain
Carlos Herrera Montalvo, Jaen, Spain
Jose Bonilla Alarcon, Jaen, Spain
Alberto D. Delgado-Martinez, MD, PhD, Jaen, Spain
This video demonstrates a minimally invasive anteromedial approach for plate osteosynthesis of distal third humeral shaft fractures.

Open Reduction and Internal Fixation of Capitellar Fractures via Headless Screws
Theodore S. Wolfson, MD, New York, NY
Dylan T. Lowe, MD, New York, NY
Sanjit R. Konda, MD, New York, NY
Kenneth A. Egol, MD, New York, NY
This video is a case-based review of capitellar fractures and demonstrates a standard technique for open reduction and internal fixation via headless compression screws.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Two Poster Sessions offer twice as many presentations.

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Session I: Tuesday – Wednesday
Session II: Thursday – Saturday

POSTER SESSION I

ADULT RECONSTRUCTION HIP P0001 – P0075

Poster No. P0001
Open Tendon Repair into a Bone Trough Improves Outcomes for Hip Abductor Tendon Avulsion
Landon Brown, MD, Houston, TX
Kwan Park, MD, Houston, TX
Bradley Lambert, PhD, Missouri City, TX
Derek Bernstein, MD, Houston, TX
Stephen J. Incavo, MD, Houston, TX

Open tendon repair into a bone trough improves outcomes for hip abductor tendon avulsion.

Poster No. P0002
High Prevalence of Gluteal Tendon Pathology in Young Patients with Femoral Impingement Cysts on MRI: A Matched Cohort Study
Joanna Bolia, MD, MSc, Vail, CO
Karen K. Briggs, MPH, Vail, CO
Charles P. Ho, MD, PhD, Vail, CO
Marc J. Philippon, MD, Vail, CO

This study showed a significant correlation between femoral impingement cysts and duration of FAI symptoms as well as abductor tendinopathy.

Poster No. P0003
Perioperative Use of Benzodiazepines and Gabapentinoids is Associated with Postoperative Delirium: A Population-Based Analysis
Janis Bekris, New York, NY
Jashvant Poeran, MD, PhD, New York, NY
Crispiana Cozowicz, MD, New York, NY
Nicole Zubizarreta, MPH, New York, NY
Madhu Mazumdar, PhD, New York, NY
Stavros G. Memtsoudis, MD, PhD, New York, NY

Population data indicates that the perioperative use of long-acting benzodiazepines and gabapentinoids may significantly increase the risk for postoperative delirium in major orthopaedic surgery.

Poster No. P0004
Developmental Hip Dysplasia Treated by Total Hip Arthroplasty Using a Cementless Wagner Cone Stem in Young Adult Patients with a Small Physique
Lin Liu, MD, Xi’An, People’s Republic of China
Shouye Hu, Xi’An, People’s Republic of China
Zhi Yang, Xi’An, People’s Republic of China

The Wagner cone femoral stem can ensure safe implantation in narrow medullary canals, especially in young DDH patients with a small physique.

Poster No. P0005
Total Joint Arthroplasty Decreases the Risk of Traumatic Falls and Fragility Fractures: An Analysis of 499,193 Cases
Albit R. Paoli, BS, Mayaguez, Puerto Rico
Daniel Wiznia, MD, Woodbridge, CT
Siddharth A. Mahure, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY

In the present case-control study we found that total joint arthroplasty decreases the risk of long-term traumatic falls and femoral neck fractures in elderly patients with hip or knee osteoarthritis.

Poster No. P0006
Female Gender and Longer Spinal Fusions Significantly Increase Risk of Subsequent Total Hip Arthroplasty
Zachary Lum, DO, Sacramento, CA
Eric O. Klineberg, MD, Sacramento, CA
Beate Danielson, PhD, Rocklin, CA
Mauro Giordani, MD, Sacramento, CA
John P. Meehan, MD, Sacramento, CA

Patients with longer spinal fusion constructs, especially in women, had a significantly increased risk of undergoing subsequent THA.

Poster No. P0007
Higher Incidence of Surgical Site Infection (SSI) in Immunologically Optimized HIV+ Patients Undergoing Primary Total Hip Arthroplasty: A Prospective Study
Carol Lin, MD, MA, Los Angeles, CA
Phillip H. Behrens, MD, Los Angeles, CA
Guy D. Paiement, MD, Los Angeles, CA
Antonio Hernandez Conte, MBA, MD, Los Angeles, CA

A total of 144 HIV+ patients undergoing primary THA were prospectively followed for 2 years. All patients were medically optimized with detailed laboratory follow up. We found an 11% rate of infection.

Poster No. P0008
Fate of Two-Stage Reimplantation After Failed Irrigation and Debridement for Periprosthetic Hip Infection
Joseph Kavoules, MD, Durham, NC
Nicholas Ting, MD, Naperville, IL
Daniel J. Cunningham, MD, Durham, NC
William L. Griffin, MD, Charlotte, NC
Thorsten M. Seyle, MD, PhD, Durham, NC
Thomas K. Fehring, MD, Charlotte, NC

Two-stage exchange procedures have a higher failure rate and consume more healthcare resources when preceded by a failed I&D.

Poster No. P0009
Is it Necessary for a Patient to Receive Antibiotic Prophylaxis or to Postpone Having an Invasive Dental Procedure after a Primary Total Joint Arthroplasty?
Pablo A. Stullitel, MD, Buenos Federal, Argentina
Jose I. Olafitiva, MD, Buenos Aires, Argentina
Nicolas S. Piuzzi, MD, Shaker Heights, OH
Martin Buttaro, MD, Buenos Aires, Argentina
Fernando M. Comba, Buenos Aires, Argentina
Francisco Piccaluga, MD, Buenos Aires, Argentina
Carlos A. Higuera Rueda, MD, Weston, FL

Systematic review on the evidence for delaying an invasive dental procedure or indicating preoperative antibiotic prophylaxis following total hip arthroplasty.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Alpha-Defensin Failed to Identify Culture Positive Propionibacterium Acnes Infection in a Cohort of 2018 Definition Musculoskeletal Infection Society Hip and Knee Infections
Lucian C. Warth, MD, Fisher, IN
Matthew R. Zielinski, Fishers, IN
Mary Ziamba-Davis, Fishers, IN
R. Michael Meneghini, MD, Fishers, IN

Alpha-defensin is an excellent tool to assist in the diagnosis of infection resulting from the majority of organisms, however is potentially less reliable in the setting of P. acnes.

A Six Step Inexpensive Biofilm Prevention Protocol Reduces the Risk for Periprosthetic Joint Infection in Primary Total Hip and Knee Arthroplasty
Kristoffel Govaers, MD, Dendermonde, Belgium
Joris Dendooven, MD, Leuven, Belgium

Infection is a devastating complication in both trauma and elective orthopaedic surgery. The bacterial contamination of instruments and implants often occurs during the actual surgical procedure. A simple 6 step Biofilm Prevention Protocol shows a low readmission rate for infection in Primary THA and TKA.

Antibiotic Spacer Design Characteristics Influence the Rate of Complications in Two-Stage Revision Hip Arthroplasty
Christopher W. Jones, FRACS, MBBS, Sydney, Australia
Allina A. Nocon, MPH, New York, NY
Mathias P. Bostrom, MD, New York, NY
Geoffrey H. Westrich, MD, New York, NY
Thomas P. Sculco, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Two-stage revision for PJ I THA requires extensive preoperative planning and optimization of spacer design to restore offset and length of fixation and minimize complications.

Characteristics of Antibiotic Prophylaxis and Risk of Surgical Site Infections in Primary Total Hip and Knee Arthroplasty
Ryley Zastrow, BS, New York, NY
Hsin-Hui Huang, MD, MS, New York, NY
Jashvant Poeran, MD, PhD, New York, NY
Patricia Saunders-Hao, New York, NY
Leesa M. Galatz, MD, New York, NY
Madhu Mazumdar, PhD, New York, NY
Calin S. Moucha, MD, New York, NY

Prophylaxis with vancomycin in THA and TKA as well as with vancomycin + cefazolin and clindamycin in TKA are associated with significantly higher odds for surgical site infection.

Medical Malpractice Litigation Following Primary Total Joint Arthroplasty; A Comprehensive, Nationwide Analysis for the Last Decade
Linsen T. Samuel, MBA, MD, Floral Park, NY
Assem Sultan, MD, Cleveland, OH
Jacob Rabin, Cleveland, OH
Christine John, Carboro, NC
Benjamin Yao, BA, Cleveland, OH
Joseph T. Moskal, MD, Roanoke, VA
Michael A. Mont, MD, New York, NY

Surgical complications in patients who had primary TJA were demonstrated as the leading cause for malpractice litigation against orthopaedic surgeons with infection and nerve injury leading.
Poster No. P0020
Higher Total Joint Surgery Volume Associated with Better Outcomes and Lower Costs
Chris Neighorn, Portland, OR
Tom Lorish, MD, Portland, OR
Geoffrey S. Tompkins, MD, Santa Rosa, CA
Shu-Ching Chang, Portland, OR
Jordan Gentry, BA, Renton, WA
Kevin Fleming, MBA, Maple Valley, WA

Higher total joint surgery volume associated with better outcomes and lower costs driven by multiple factors including average total implant cost per case, operative time, and hospital length of stay.

Poster No. P0021
Five-Year Follow Up of the Cup Cage Construct for Severe Acetabular Deficiency: Radiographic Outcomes
Paul N. Morton, MD, Chicago, IL
Kory Johnson, DO, Byron Center, MI
Yasser Farid, MD, PhD, Chicago, IL
Henry A. Finn, MD, Chicago, IL

Five-year follow up of the cup cage construct for severe acetabular deficiency: radiographic outcomes.

Poster No. P0022
Does Smoking Affect the Outcomes following Primary Total Hip Arthroplasty? A Retrospective Observational Study of 60,812 Patients from the United Kingdom Clinical Practice Research Datalink
Gurraj Matharu, MBBCHB, Worcestershire, United Kingdom
Sofia Mouchti, Bristol, United Kingdom
Antonella Delmestri, PhD, Oxford, United Kingdom
David W. Murray, MD, Oxford, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom

Present healthcare provider attempts to universally deny THA to smokers are not justified. However effective preoperative smoking cessation strategies may improve outcomes.

Poster No. P0023
Hypoalbuminemia Remains an Independent Predictor of Primary Total Joint Complications
George W. Fryhofer, MD, Philadelphia, PA
Matthew Sloan, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA

Low albumin remains a significant independent predictor of adverse outcomes in patients undergoing primary THA and TKA, even after controlling for several common comorbid conditions.

Poster No. P0024
National Obesity Trends Among Total Joint Arthroplasty Patients and Impact on Complications
Kevin Pirrucciu, BA, Philadelphia, PA
Matthew Sloan, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA

This study used a large national database to evaluate effects of obesity and morbid obesity on total hip and knee arthroplasty outcomes, and evaluate trends in rates of obesity among the total joint population.

Poster No. P0025
Internal Validation of a Predictive Model for Complications after Total Hip Arthroplasty
Kyle Kunze, BS, Chicago, IL
Jefferson Li, BA, Chicago, IL
Kamran Movassaghi, Glendale, CA
Adam Wiggins, Carlock, IL
Scott M. Sporer, MD, Wheaton, IL
Brett R. Levine, MD, Chicago, IL

We validated a scoring system to identify patients at higher risk of complications following total hip arthroplasty. The score identifies modifiable risks for patients to optimize prior to surgery.

Poster No. P0026
Next-Generation Sequencing DNA Analysis in a Cohort of 2018 Definition Musculoskeletal Infection Society Hip and Knee Infections
Lucian C. Warth, MD, Fisher, IN
Matthew R. Zielinski, Fishers, IN
Mary Ziemba-Davis, Fishers, IN
R. Michael Meneghini, MD, Fishers, IN

In nearly 35% of infected TJA cases with multiple cultures positive for the same organism, next-generation sequencing was negative for the isolated pathogen. Further study is required prior to widespread adoption.

Poster No. P0027
Aspirin Thromboprophylaxis Confers No Increased Risk for Aseptic Loosening Following Cementless Primary Hip Arthroplasty
Karan Goswami, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Patrick Schlitt, BS, Haddonfield, NJ
Paul M. Courtney, MD, Philadelphia, PA

This study examined if patients receiving aspirin for VTE prophylaxis had higher rates of aseptic loosening when compared to patients receiving warfarin after THA.

Poster No. P0028
90-Day Readmission Rate and Complications following Conversion Total Hip Arthroplasty
Christopher W. Jones, FRACS, MBBS, Sydney, Australia
Allina A. Nocon, MPH, New York, NY
Nicolas A. Selemon, BA, New York, NY
Thomas P. Sculco, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Karan Goswami, MD, Philadelphia, PA

There is a higher complication and 90-day readmission rate for conversion THA compared to conventional primary THA. This complexity should be considered under a bundled payment structure.

Poster No. P0029
Aspirin for Venous Thromboembolism Prophylaxis Decreases Mortality after Primary Total Joint Arthroplasty
Alexander Rondon, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Timothy Tan, MD, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Ronald Huang, MD, New York, NY
Javad Parvizi, MD, FRCS, Philadelphia, PA

Administration of aspirin as a VTE prophylaxis reduces the risk of mortality following primary TJA.
Poster No. P0030

Heterotopic Ossification after Direct Anterior Approach Total Hip Arthroplasty
Jacob Babu, MD, Providence, RI
Eric M. Cohen, MD, Providence, RI
John R. Tuttle, MD, Roanoke, VA
Daniel L. Eisenon, Baltimore, MD
Lee E. Rubin, MD, New Haven, CT

The radiographic incidence of HO in direct anterior approach THA was 36.9%, which is within the previously reported range of HO seen for lateral and posterior approaches to the hip.

Poster No. P0031

Newly Accredited Orthopaedic Residency Programs Reduce the Risk-Standardized Complication Rates for Total Hip and Knee Arthroplasty in the Medicare Population at their Teaching Hospitals
Kevin Pirruccio, BA, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA

Using the CMS Hospital Compare database, newly accredited orthopaedic surgery residency programs were shown to reduce teaching hospital complication rates for total hip and knee arthroplasty.

Poster No. P0032

Low Dislocation Rate with a Modern Posterior Approach Total Hip Arthroplasty including High-Risk Patients
Daniel Witmer, MD, West Hartford, CT
Evan Deckard, Fishers, IN
R. Michael Meneghini, MD, Fishers, IN

The study purpose was to report experience with a modern posterior approach THA including high risk patients and to describe intraoperative techniques to optimize stability.

Poster No. P0033

Prophylactic Tamsulosin Does Not Reduce the Risk of Urinary Retention Following Lower Extremity Arthroplasty: A Double-Blind Randomized Controlled Trial
Manuel Schubert, MD, Ann Arbor, MI
Jared Thomas, MD, Philadelphia, PA
Joel J. Gagnier, PhD, Ann Arbor, MI
Caitlin McCarthy, Ann Arbor, MI
R. Michael Meneghini, MD, Fishers, IN

Prophylactic use of tamsulosin does not reduce the incidence of urinary retention following lower extremity arthroplasty compared to placebo.

Poster No. P0034

A Decade After the First Warning and Eight Years After the Recall: The Fate of ASR Hip Replacements
Aleksi Reito, MD, PhD, Tampere, Finland
Olli Lainiala, MD, PhD, Tampere, Finland
Antti Eskelinen, MD, PhD, Tampere, Finland

The 10-year survival rates after extensive screening for ALTR seen in our study should work as benchmark values when assessing the possible revision burden of patients with ASR hip replacements.

Poster No. P0035

Today's Nonagenarians: Too Old for Arthroplasty?
Stephen Sizer, DO, La Jolla, CA
Julie C. McCauley, La Jolla, CA
William Bugbee, MD, San Diego, CA
Adam Rosen, DO, La Jolla, CA

In our matched cohort study, nonagenarians had higher rates of complications than younger patients following total joint arthroplasty.

Poster No. P0036

Racial Disparities in Perioperative Outcomes Following Primary Total Hip Arthroplasty
Mitchell Johnson, Clarkston, MI
Matthew Sloan, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA
Charles L. Nelson, MD, Philadelphia, PA

Large national database evaluation of race as an independent risk factor for perioperative complications following total hip arthroplasty.

Poster No. P0037

Digitalized Analyses of Perioperative Acetabular Cup Position using Image-Matching Technique in Total Hip Arthroplasty
Shinya Kawahara, MD, Fukuoka, Japan
Taishi Sato, MD, PhD, Fukuoka City, Japan
Kazuki Kitade, Kurume, Japan
Takeshi Shimoto, Fukuoka, Japan
Kazuhiko Sonoda, MD, Fukuoka, Japan
Tetsuro Nakamura, MD, Kitakyushu, Japan
Satoshi Shin, Kitakyushu City, Japan
Taro Mataitari, MD, PhD, Fukuoka City, Japan
Toshihiko Hara, MD, Fukuoka, Japan

We have developed a computational analysis of the acetabular cup orientation using image-matching technique with extremely high accuracy compared to visual evaluations in total hip arthroplasty.

Poster No. P0038

Comparison of Radiological Parameters Following Navigated and Conventional Total Hip Arthroplasty: A Retrospective Data Analysis
David T. Wallace, ChB, MB, Clydebank, Scotland
Navin Balasubramanian, MBBS, MRCSEd, Chennai, India
Rohit Maheshwari, FRCS, Bearsden, United Kingdom
Alistair M. Ewen, PhD, Clydebank, United Kingdom
Kumar K. Kaushik, MBBS, MS, Glasgow, United Kingdom
Nicholas J. Holloway, FRCS (Ortho), MBCHB, Clydebank, United Kingdom
Kamal Deep, MD, Glasgow, United Kingdom

Comparing navigated and nonnavigated THA, navigation reduced radiographic variability but did not reduce dislocation or improve early satisfaction.

Poster No. P0039

Does an Intraoperative Radiograph Help Optimize Leg Length, Offset, and Cup Position during Posterior Approach Total Hip Arthroplasty?
Nicholas M. Brown, MD, Chicago, IL
James F. McDonald, BS, Alexandria, VA
Robert Hopper, PhD, Alexandria, VA
C. A. Engh, MD, Alexandria, VA

The use of an intraoperative x-ray by an experienced surgeon was not associated with clinically important improvements in cup positioning, offset, or leg length.

Poster No. P0040

Postoperative Excessive Anterior Acetabular Coverage is Associated with Decrease in Range of Motion after Periacetabular Osteotomy
Shinya Hayashi, MD, Kobe Japan
Shingo Hashimoto, MD, Kobe, Japan
Koji Takayama, MD, PhD, Kobe, Japan
Tomoyuki Matsumoto, MD, Kobe, Japan
Ryosuke Kuroda, MD, Kobe, Japan

The aim of this study was to evaluate the relationship between acetabular three-dimensional alignment and ROM after PAD. Postoperative anterior acetabular coverage may affect ROM.
**Poster No. P0041**

**Elevated Biomarker Levels of Cartilage Breakdown and Inflammation are Present in Patients with Stable Slipped Capital Femoral Epiphysis**

Devon Nixon, MD, Saint Louis, MO  
Lauren Davis, MPH, St Louis, MO  
Perry L. Schoenecker, MD, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO  
Jeffrey J. Nepple, MD, Saint Louis, MO

Residual SCFE deformity can lead to cartilage injury, but identifying at-risk hips is challenging. Here, biomarkers for cartilage breakdown and inflammation are elevated in SCFE patients to controls.

**Poster No. P0042**

**Inflammation and Early Osteoarthritis Pathways are Activated and Globally Expressed throughout the Articular Cartilage of the Impingement Zone in Hips with Femoroacetabular Impingement**

Masahiko Haneda, MD, PhD, Saint Louis, MO  
Muhammad Farooq Rai, PhD, Saint Louis, MO  
Robert H. Brophy, MD, Chesterfield, MO  
Lei Cai, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO  
Cecilia Pascual-Garrido, MD, Saint Louis, MO

This study provides insight into the possible pathogenesis of hip OA in patients with hip impingement and supports that hip impingement may be a structural precursor to hip osteoarthritis.

**Poster No. P0043**

**Surgical Treatment of Femoroacetabular Impingement: Arthroscopy vs. Surgical Hip Dislocation – A Propensity Matched Analysis**

Jeffrey J. Nepple, MD, Saint Louis, MO  
Ira Zaltz, MD, Royal Oak, MI  
Ashesh Bedi, MD, Ann Arbor, MI  
Paul E. Beaule, MD, Ottawa, ON, Canada  
Michael B. Millis, MD, Boston, MA  
Rafael J. Sierra, MD, Rochester, MN  
Ernest L. Sink, MD, New York, NY  
John C. Clohisy, MD, Saint Louis, MO  
ANCHOR Study Group

In a propensity matched analysis, patients undergoing hip arthroscopy or surgical hip dislocation demonstrated similar outcomes.

**Poster No. P0044**

**Charnley Cemented vs. Contemporary Uncemented Total Hip Arthroplasty with Highly Crosslinked Polyethylene Inserts: Have We Improved in 50 Years?**

Meagan E. Tibbo, MD, Rochester, MN  
Atton Limberg, Rochester, MN  
Matthew P. Abdel, MD, Rochester, MN  
Daniel J. Berry, MD, Rochester, MN

As THA has evolved, the risk of revision for aseptic loosening/osteolysis has improved; however, the risk of periprosthetic fracture and infection has increased, and dislocation risk remains unchanged.

**Poster No. P0045**

**Alarmingly High Rates of Implant Fracture of a Polished Tapered Femoral Stem**

Stijn Gijselings, MD, Leuven, Belgium  
Jens Vanbiervliet, Kortrijk, Belgium  
Jean-Pierre Simon, MD, Pellenberg, Belgium

Alarmingly high rates of implant fracture of a polished tapered femoral stem - a copy is not the same as the original.

**Poster No. P0046**

**Rapidly Progressive Osteonecrosis following Intra-Articular Steroid Injection of the Hip: Description, Incidence, and Risk Factors for Occurrence**

Kanu M. Okike, MD, Honolulu, HI  
Ryan K. King, Kailua, HI  
Jason Merchant, MD, Honolulu, HI  
Eugene A. Toney, MD, Honolulu, HI  
Gregory Y. Lee, MD, Kailua, HI  
Hyo-Chun Yoon, MD, PhD, Honolulu, HI

The incidence of rapidly progressive osteonecrosis following intra-articular hip steroid injection was 2.8%. This complication was more common among patients who received high-dose steroid injections.

**Poster No. P0047**

**The Incidence of Osteonecrosis in Patients with Systemic Lupus Erythematosus Tends to Decrease with Combination of Immunosuppressant Agents**

Kento Nawata, MD, Chiba, Japan  
Junichi Nakamura, MD, Chiba, Japan  
Shigeo Hagiwara, MD, PhD, Chiba, Japan  
Yuya Kawarai, MD, Chiba, Japan  
Masahiko Sugano, MD, Chiba, Japan  
Kensuke Yoshino, MD, Chiba, Japan  
Yasushi Wako, Chiba City, Japan  
Michiaki Miura, Chiba, Japan  
Seiji Ohtori, MD, PhD, Chiba, Japan

After introduction of immunosuppressant agents, incidence of glucocorticoid-associated osteonecrosis in SLE patients has decreased to 26% with MRI.

**Poster No. P0048**

**Characterization of Postoperative Opioid Consumption and Disposal Patterns after Total Hip and Knee Arthroplasty with a Novel Mobile Phone Text Messaging Platform**

Ajay Premkumar, MD, MPH, New York, NY  
Francis Lovecchio, MD, New York, NY  
Jeffrey G. Stepan, MD, MSc, New York, NY  
Chelsea Koch, BS, New York, NY  
Kaitlin M. Carroll, BS, New York, NY  
Peter K. Sculco, MD, New York, NY  
Seth A. Jerabek, MD, New York, NY  
David J. Mayman, MD, New York, NY  
Alejandro Gonzalez Della Valle, MD, New York, NY  
Andrew D. Pearle, MD, Rye, NY  
Steven B. Haas, MD, New York, NY  
Michael M. Alexiades, MD, Manhattan, NY  
Todd J. Albert, MD, New York, NY  
Michael B. Cross, MD, New York, NY  
HSS ARJR Opioid Research Group

This prospectively collected data provides a benchmark for average opioid consumption after primary uncomplicated unilateral THA and TKA. Most patients do not dispose of leftover pills appropriately.

**Poster No. P0049**

**Who Cares for Total Hip Arthroplasty Complications? Rates of Readmission to the Same or a Different Hospital as the Index Procedure**

James Chen, MD, Santa Monica, CA  
Edward Cheung, MD, Santa Monica, CA  
Alexandra Stavrikas, MD, Calabasas, CA  
Vishal Hegde, MD, Santa Monica, CA  
Nelson F. SooHoo, MD, Santa Monica, CA

The majority of patients requiring postoperative readmission present to the same hospital as the index THA. However academic and metropolitan locations have lower odds of same hospital readmissions.
POSTER SESSION I

Poster No. P0050
Risk Factors for Postoperative Periprosthetic Fracture Revision after Cementless Primary Total Hip Replacement: An Analysis of the National Joint Registry for England and Wales
Jonathan N. Lamb, MBBS, Leeds, United Kingdom
Gulraj Matharu, MBCHB, Worcestershire, United Kingdom
Ben Van Duren, Leeds, United Kingdom
George S. Whitwell, FRCS (Ortho), MBCHB, Leeds, United Kingdom
Anthony Redmond, PhD, Leeds, UK, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom

The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

Poster No. P0051
Accuracy of Implant Positioning and Leg Length Equality in Total Hip Arthroplasty in Supine Position for Dysplastic Hip
Arihiko Kanaji, Tokyo, Japan
Toru Nishiwaki, Tokyo, Japan
Akihito Oya, Tokyo, Japan
Ryo Ogawa, MD, Tokyo, Japan
Yasuo Niki, MD, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan

THA in supine position allows the accurate implant placement and acceptable equalization of the leg length, with good medium-term outcomes, even in patients with Crowe classification grade II and III severe dysplasia.

Poster No. P0052
Mapping of the Stable Articular Surface and Available Bone Stock in Geriatric Acetabulum Fractures
Meir T. Marmor, MD, San Francisco, CA
Riley Knox, BS, San Francisco, CA
Safa Herfat, PhD, San Francisco, CA
Reza Firoozabadi, MD, Seattle, WA

This study outlines the articular surface and bone corridors available for primary total hip cup fixation after acetabulum fractures.

Poster No. P0053
Increased Orthopaedic Specialization Lowers Costs and Improves Outcomes in Total Joint Arthroplasty
Lauren Bockhorn, Houston, TX
Mitzi S. Laughlin, PhD, ATC, Houston, TX
Robin N. Goytia, MD, Houston, TX
Anay R. Patel, MD, Houston, TX

Hospitals with increased orthopaedic specialization appear to perform primary total joint arthroplasty for Medicare patients at a lower cost while having lower complication and readmission risk.

Poster No. P0054
Even in the Same Patient, Not All Hips are the Same: Implant Size and Outcome Differences in Staged Bilateral Hip Replacements in 300 Patients
Alexander P. Sah, MD, Fremont, CA

Anatomic variability even within the same patient leads to acetabular and femoral components which are frequently different in size, although outcomes between the two are similar.

Poster No. P0055
The Biomechanical Basis for Sagittal Plane Acetabular Targeting in Total Hip Arthroplasty
Russell J. Bodner, MD, Sycamore, IL

The first description of sagittal plane targeting based on biomechanical fulfillment of Lazennec’s sacroacetabular angle equation and Dorr’s pelvic mobility studies with relevance to coronal positions.

Poster No. P0056
Borderline Acetabular Dysplasia: Independent Predictors of Hip Instability Versus Impingement
Jeffrey J. Nepple, MD, Saint Louis, MO
Elizabeth A. Graesser, Saint Louis, MO
Joel E. Wells, MD, MPH, Dallas, TX
John C. Clohisy, MD, Saint Louis, MO

We found significant differences in the clinical characteristics and radiographic features of the symptomatic instability and impingement subgroups within the borderline dysplasia cohort.

Poster No. P0057
In Vivo Comparison of Normal Hip Kinematics with Degenerative Hips Before and After Total Hip Arthroplasty
Jarrod Nachtab, BS, Knoxville, TN
Garet M. Dessinger, BS, Knoxville, TN
Milad Khasian, Knoxville, TN
Michael LaCour, BS, Knoxville, TN
Adrija Sharma, PhD, Knoxville, TN
Richard D. Komistek, PhD, Knoxville, TN

Radiographic analysis of in vivo kinematics of 20 subjects (10 normals and 10 degeneratives pre- and postoperatively) to find comparisons between the three groups.

Poster No. P0058
Does Length of Trochanteric Osteotomy Affect Amount of Greater Trochanter Migration After Revision Total Hip Arthroplasty?
Sebastian Leon, MD, Santiago, Chile
Ethan Sanders, BS, Mississauga, ON, Canada
Xin Y. Mei, MD, Toronto, ON, Canada
Oleg Safir, MD, Toronto, ON, Canada
Allan E. Gross, MD, FRCSC, Toronto, ON, Canada
Paul R. Kuzyk, MD, FRCSC, Toronto, ON, Canada

Shorter osteotomy length appears to be associated with higher risk for significant proximal GT migration, an osteotomy longer than 10 cm may help avoid almost all cases of significant GT migration.

Poster No. P0059
Surgeon and Hospital Variation in Revision Rates for Primary Hip and Knee Replacement Surgery
Ian Harris, MBBS, FRACS, Daringhurst, Australia
Alana Cuthbert, Adelaide, Australia
Richard De Steiger, MD, FRCSC, Richmond, Australia
Peter L. Lewis, MB, Adelaide, Australia
Stephen Graves, MD, Adelaide, Australia

There is considerable surgeon and hospital-level variation in the rate of revision after total hip (THA) and total knee arthroplasty (TKA). The variation is largely explained by prosthesis selection.
Poster No. P0060
Patients Less than 50 Years Old Undergoing Revision Total Hip Arthroplasty for Instability Had a High Redislocation Rate and Poor Long-Term Survivorship Free of Rerevision
Brian Chalmers, MD, Rochester, MN
Graham Pallante, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Michael J. Taunton, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN

Revision THA for instability in patients ≤50 years had a high redislocation rate of 36%. Ten-year all-cause rerevision survivorship was 66%; further, a concerning 11% of patients developed a PJI.

Poster No. P0061
Degenerative Lumbar Spine Disease, not Lumbar Fusion, is a Risk Factor for Instability after Posterior Approach Total Hip Arthroplasty
Daniel Witmer, MD, West Hartford, CT
Evan Deckard, Fishers, IN
R. Michael Meneghini, MD, Fishers, IN

Primary study objectives were to report the incidence of lumbar spine DJD, previous lumbar spinal fusion, and to evaluate their relationship to postoperative instability in posterior approach THA.

Poster No. P0062
Long-Term Outcomes of Constrained Liners Cemented into Retained, Well-Fixed Acetabular Components
Timothy Brown, MD, Iowa City, IA
Meagan E. Tibbo, MD, Rochester, MN
Diren Arsoy, MD, New Haven, CT
David G. Lewallen, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

Cementing a constrained liner into a retained acetabular shell led to durable survivorship free from instability at 10 years, with poorer aseptic survivorship (67%) due to liner dissociation.

Poster No. P0063
Does Surgical Approach Influence the Long-Term Patient Reported Outcomes after Primary in Total Hip Replacement: Comparison of the Three Main Surgical Approaches
Romain Galmiche, MD, Lille, France
Stephane Poitras, PhD, PT, Ottawa, ON, Canada
Johanna Dobransky, MA, Ottawa, ON, Canada
Paul R. Kim, MD, Ottawa, ON, Canada
Hesham Abdelbary, FRCS, MD, Ottawa, ON, Canada
Robert J. Feibel, MD, Ottawa, ON, Canada
Paul E. Beaule, FRCS (Ortho), MD, Ottawa, ON, Canada

Does surgical approach influence the long-term patient reported outcomes after primary in total hip replacement: by comparing the three main surgical approaches, we found no significant difference.

Poster No. P0064
Accuracy of Cup Positioning of Supine vs. Lateral Position in Total Hip Arthroplasty using Anterolateral Approach: A Prospective, Randomized, Controlled Trial
Ryohei Takada, MD, Tokyo, Japan
Tetsuya Jinno, MD, PhD, Saitama, Japan
Kazumasa Miyatake, MD, PhD, Sacramento, CA
Masanobu Hirao, MD, Yokohama, Japan
Atsushi Okawa, Tokyo, Japan

Our study showed that the accuracy of cup positioning in supine position was superior to that in lateral position in total hip arthroplasty using anterolateral approach.

Poster No. P0065
Pain Control after Total Hip Arthroplasty: A Randomized Trial Determining Efficacy of Fascia Iliaca Compartment Blocks in the Immediate Postoperative Period
Kamil J. Bober, MD, Royal Oak, MI
Michael A. Charters, MD, Northville, MI
Wayne T. North, MD, Grosse Pointe Woods, MI
Allen Kadado, MD, Royal Oak, MI
Michael C. Mahan, MD, Detroit, MI

This randomized controlled trial shows that fascia iliaca compartment block does not improve functional performance and does not decrease pain levels or narcotic usage after mini-posterior THA.

Poster No. P0066
Predictors of Continued Opioid Usage following Total Hip Arthroplasty using a Mandatory Controlled Substances Database
Timothy Tan, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Zachary Wilt, MD, Philadelphia, PA
William Wang, MD, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Pedro K. Beredjiklian, MD, Philadelphia, PA
William V. Arnold, MD, Meadowbrook, PA

This study evaluated the predictors for a second opioid prescription and created a risk calculator for continued opioid consumption longer than 6 months postoperatively.

Poster No. P0067
Post-Acute Care Analysis after Total Joint Arthroplasty: Characteristics, Readmission, and Alternatives for Patients that Receive Home Health Services
Nicholas Shepard, MD, New York, NY
Erez Schachter, BA, Boston, MA
John N. Morris, PhD, Tyngsboro, MA
Ran Schwarzkopf, MD, New York, NY

Using a predictive model we have identified patient risk profiles and independent variables that should be considered in the post-acute care setting following total joint arthroplasty.

Poster No. P0068
Preemptive Analgesia with Extended-Release Oxycodone is Associated with More Pain Following Total Hip Replacement
Herbert J. Cooper, MD, New York, NY
Akshay Lakra, MBBS, MD, New York, NY
Robert Maniker, MD, New York, NY
Thomas R. Hickernell, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Jeffrey A. Geller, MD, New York, NY

Patients who were given preemptive long-acting opioids immediately prior to THA experienced more pain and ambulated shorter distances postoperatively as compared to those who were not.

Poster No. P0069
Post-Discharge Opiate Prescribing Habits after Primary Total Hip and Total Knee Replacement: A Survey of American Academy of Hip and Knee Surgeons Members
Jason Lipof, MD, Rochester, NY
Alexander Greenstein, MD, West Henrietta, NY
Zachary Zmich, MD, Rochester, NY
Alex Lander, BS, Narragansett, RI
Caroline Thirukumaran, Rochester, NY
Benjamin Ricciardi, MD, Rochester, NY

Despite performing a relatively standardized procedure, significant variability exists with regard to postdischarge narcotic and multimodal analgesia prescribing patterns after primary THA and TKA.
Poster No. P0071
Implant Survival following Total Hip Arthroplasty in Patients 30 Years or Younger
Maiziar Mohaddes, MD, Molndal, Sweden
Johan N. Karrholm, MD, Molndal, Sweden
Ola Rolffson, MD, PhD, Molndal, Sweden
Henrik Malchau, MD, Cambridge, MA

The 10-year implant survival following total hip arthroplasty in the very young patient is promising.

Poster No. P0072
Iliopsoas Contact Pressures After Total Hip Replacement
Hugh L. Jones, Houston, TX
Ryan D. Blackwell, BS, Houston, TX
Angela Chun, MD, Chicago, IL
Sabir Ismaily, Houston, TX
Ryan Kim, BA, Houston, TX
Christopher R. Lenherr, MSc, Zurich, Switzerland
Daniel Le, MD, Houston, TX
Philip C. Noble, PhD, Houston, TX

This study examines the effect of femoral head size on contact pressures between the anterior hip and the iliopsoas musculo-tendinous complex by simulating a pivot maneuver with implanted samples.

Poster No. P0073
Tranexamic Acid versus Aminocaproic Acid versus Control: Which Method has the Least Blood Loss and Transfusion Rates?
Zachary Lum, DO, Sacramento, CA
Martin Manoukian, BS, Sacramento, CA
Christopher Pacheco, BA, Sacramento, CA
Alexander J. Nedopil, MD, Sacramento, CA
Mauro Giordani, MD, Sacramento, CA
John P. Meehan, MD, Sacramento, CA

When comparing between EACA and TXA, TXA had lower blood loss, transfusion rates, and number of patients requiring transfusion.

Poster No. P0074
Prospective Evaluation of a Non-Invasive Hemoglobin Measurement System in Total Joint Arthroplasty
Michael J. Casale, MD, New Orleans, LA
Bradford S. Waddell, MD, Greenwich, CT
Connor A. Ojard, MD, Meadowbrook, PA
Pedro K. Beredjiklian, MD, Philadelphia, PA
William V. Arnold, MD, Meadowbrook, PA
William A. Smith, MD, New Orleans, LA

A non-invasive hemoglobin monitoring system offers similar hemoglobin readings to a standard lab-draw, while improving satisfaction and lowering cost, in patients undergoing total joint arthroplasty.

Poster No. P0075
Outcome of a Hemispherical Porous-Coated Acetabular Component with a Proximally Hydroxyapatite-Coated Anatomical Femoral Component after a Minimum Follow Up of 23 Years
Eduardo García-Rey, MD, Madrid, Spain
Rafael C. Escobar, Madrid, Spain
Eduardo García-Cimbrelo, MD, Madrid, Spain
José Cordero-Ampuero, Madrid, Spain

Although continued durable fixation can be observed with a porous-coated cups and a proximally hydroxyapatite-coated anatomic stem, true wear continues to increase at a constant level after a minimum follow up of twenty-three years.

Poster No. P0076
A Comparison of the Outcomes of Cemented and Cementless Mobile Bearing Unicompartmental Knee Arthroplasty: A Propensity Score Matched Study of 10,836 Knees from the National Joint Registry for England and Wales
Hasan Mohammad, MBCCH, MSc, Oxford, United Kingdom
Gurraj Matharu, MBCHB, Worcestershire, United Kingdom
Barbara Marks, Oxford, United Kingdom
Stephen J. Mellon, PhD, Oxford, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
David W. Murray, MD, Oxford, United Kingdom

Cementless UKA has superior implant survivorship compared with cemented UKA at 5 years with half the risk of revision for aseptic loosening.

Poster No. P0077
Operative Time, Length of Stay, Short-Term Readmission, and Complications after Hinged Primary Total Knee Arthroplasty: A Propensity Score Matched Analysis
Nipun Sodhi, BA, Cleveland, OH
Jaiben George, Cleveland, OH
Hiba Anis, MD, Cleveland, OH
Assem Sultan, MD, Cleveland, OH
Jared M. Newman, MD, Brooklyn, NY
Anton Khlopas, MD, Elmwood Park, IL
Joseph T. Moskal, MD, Roanoke, VA
Carlos A. Higuera Rueda, MD, Weston, FL
Michael A. Mont, MD, New York, NY

Primary TKAs with hinged prostheses had increased operative times, but similar LOS, discharge dispositions, and 30-day rates of readmission and complications compared to non-hinged TKAs.

Poster No. P0078
The Influence of Microbial Diagnosis and Chronicity on the Outcome of Debridement with Antibiotics and Implant Retention
Christopher W. Jones, FRACS, MBBS, Sydney, Australia
Nicolás A. Selemon, BA, New York, NY
Allina A. Nocon, MPH, New York, NY
Andy Miller, MD, New York, NY
Michael Henry, MD, New York, NY
Michael B. Cross, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Contrary to previous suggested protocols, DAIR may be contraindicated in staph aureus acute PJI, but may actually be more efficacious in chronic PJI than previously considered.

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Poster No. P0079
The Efficacy of a Drug Holiday Test on Two-Stage Revision for Infected Total Knee Arthroplasty
Chun-Hung Chang, Taipei, Taiwan
Yu-ting Su, MD, Taipei City, Taiwan
Kuei Hsiang Hsu, Taipei, Taiwan

Two-week drug holiday test could avoid CRP resurge rate and shorten hospital stay. DHT positively affected the subsequent mid-term infection rate after PJI treatment.

Poster No. P0080
Diabetes Mellitus Type One Poses Greater Risk for Periprosthetic Joint Infection than Type Two for Patients Undergoing Total Joint Arthroplasty
Maury L. Hull, PhD, Davis, CA
Stephen M. Howell, MD, Sacramento, CA
Trevor J. Shelton, MD, Sacramento, CA

Our data demonstrated an increased risk for PJI in patients with DM1 compared with DM2 and the risk of PJI appears to increase with each additional diabetic complication in DM1 and DM2 patients.

Poster No. P0081
Periprosthetic Tissue Reaction Independent of Lymphocyte Transformation Testing Result and Implanted Materials in Total Knee Arthroplasty
Brian A. Schneiderman, MD, Torrance, CA
Steven Yang, MD, Redondo Beach, CA
Edward J. McPherson, MD, Los Angeles, CA
Matthew Dipane, BA, Los Angeles, CA
Conrad Lu, MD, Los Angeles, CA

LTT result fails to predict a local immune response in tissue obtained during revision TKA for possible immune failure.

Poster No. P0082
A Total Knee Arthroplasty with a Tibial Force Greater than Native Loses Motion and Translates Anteriorly
Trevor J. Shelton, MD, Sacramento, CA
Stephen M. Howell, MD, Sacramento, CA
Maury L. Hull, PhD, Davis, CA

A TKA with a tibial force greater than native has signs of stiffness; a strategy for lowering this risk is to match the tibial force of the native knee when balancing a TKA to restore high function.

Poster No. P0083
Patient Factors that Challenge Tibial Fixation in Cementless Total Knee Arthroplasty are Not What They Seem
Jeffrey Bischoff, PhD, Warsaw, IN
Marc Bandi, MSc, ETH, Winterthur, Switzerland
Erik Siggelkow, MSc, Winterthur, Switzerland
Fred Wentorf, PhD, Warsaw, IN
Brian Roach, Osceola, IN
Nick Drury, MS, Warsaw, IN
John P. Mueller, PhD, Warsaw, IN
Louis M. Kwong, MD, Torrance, CA

Walking gait (not lunge or stair descent) and cruciate retaining designs (not cruciate sacrificing) lead to more micromotion at the implant-bone interface in cementless total knee arthroplasty.

Poster No. P0084
Consequences of Sagittal Component Malalignment and Imbalance in Total Knee Arthroplasty
Vincent Galea, BA, Boston, MA
James W. Connelly, BA, Boston, MA
Sean J. Matuszak, BA, Boston, MA
Mina A. Botros, BS, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
Christian Skovgaard Nielsen, MD, Copenhagen, Denmark
James I. Huddleston, MD, Redwood City, CA
Charles R. Bragdon, PhD, Boston, MA
Henrik Maichau, MD, Cambridge, MA
Anders Toelsen, MD, PhD, Copenhagen, Denmark

In this assessment of sagittal alignment metrics, we found that tibial slope (TS) is highly predictive of PROMs; moreover, a balance between TS and posterior condylar offset is necessary.

Poster No. P0085
Periprosthetic Bone Mineral Density Change after Total Knee Arthroplasty (Titanium Alloy vs. Cobalt-Chromium)
Woo Cheol Shin, Seoul, Republic of Korea
Min Ku Song, Seoul, Republic of Korea
Joohnee Lee, MD, Seoul, Republic of Korea
Jangyun Lee, MD, Seoul, Republic of Korea
Jae-Young Park, MD, Seoul, Republic of Korea
Duhyun Ro, MD., Seoul, Republic of Korea
Hyuk Soo Han, MD, Seoul, Republic of Korea
Myung C. Lee, MD, Seoul, Republic of Korea

Periprosthetic bone mineral density was decreased two years after TKA. Compare to titanium implant, cobalt chrome implant showed significantly larger decrease of pBMD in proximal medial tibia area.

Poster No. P0086
Bicruciate Retaining Total Knee Arthroplasty Does Not Restore Native Knee In Vivo Kinematics During Strenuous Activities
Ming Han Lincoln Liow, MD, Singapore, Singapore
Tsung-Yuan Tsai, PhD, Shanghai, People’s Republic of China
Paul G. Arauz, PhD, Boston, MA
Yun Peng, PhD, Boston, MA
Guoan Li, PhD, Boston, MA
Young-Min Kwon, MD, PhD, Boston, MA

In vivo tibiofemoral kinematic parameters are not fully restored in patients with bicruciate retaining TKA during strenuous activities.

Poster No. P0087
Impact of Anterior Cruciate Ligament Status on Early Satisfaction and Clinical Outcomes Following Total Knee Arthroplasty
Philip Locker, MD, Chicago, IL
Tori Edmiston, Colorado Springs, CO
Ali Etemad-Rezaie, MSc, North Chicago, IL
Andrew C. Sexton, Saint Louis, MO
Daniel D. Bohl, MD, MPH, Chicago, IL
Brett R. Levine, MD, Chicago, IL

This study looked at prospective intraoperative ACL integrity assessment and its impact on postoperative outcomes.
Poster No. P0088
Incidence of Drug Abuse in Revision Total Knee Arthroplasty Population
Jennifer Kurowicki, MD, Jersey City, NJ
Martin W. Roche, MD, Fort Lauderdale, FL
Tsun Yee Law, MD, Fort Lauderdale, FL
Nipun Sodhi, BA, Cleveland, OH
Samuel Rosas, MD, Winston-Salem, NC
Assem Sultan, MD, Cleveland, OH
Shaneli Disla, BS, Fort Lauderdale, FL
Kevin Wang, MD, Ft Lauderdale, FL
Michael A. Mont, MD, New York, NY

Drug abuse or dependent patients are at increased risk for revision total knee arthroplasty.

Poster No. P0089
Conversion Total Knee Arthroplasty: A Distinct Surgical Procedure with Increased Resource Utilization and Risk
Michael A. Bergen, BS, Durham, NC
Sean P. Ryan, MD, Durham, NC
Cierra S. Hong, BA, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Conversion TKA is associated with higher operative time, blood loss, postoperative readmission rate, and prosthetic joint infection rate compared to primary TKA.

Poster No. P0090
How Much Preoperative Weight Do Morbidly Obese Patients Undergoing Total Knee Arthroplasty Need to Lose to Meaningfully Improve Outcomes?
Benjamin Keeney, PhD, Lebanon, NH
Daniel Austin, MD, White River Junction, VT
David S. Jevsevar, MD, MBA, Grantham, NH

Losing at least 20 pounds before TKA was associated with shorter LOS and lower odds of facility discharge for morbidly obese patients.

Poster No. P0091
Does Obesity Impact Venous Thromboembolic Disease Following Hip and Knee Arthroplasty?
Matthew Sloan, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA

Large national cohort was evaluated to determine whether venous thromboembolism rates varied by obesity category, which would necessitate changing chemoprophylaxis protocols.

Poster No. P0092
Biomechanical Evaluation of New Synthetic Polyethylene Graft Augmentation for Extensor Mechanism Reconstruction in Total Knee Arthroplasty
Joseph Karam, MD, Chicago, IL
Amrit D. Parekh, MD, Chicago, IL
Farid Amirouiche, MD, Chicago, IL
Ritesh Shah, MD, Glenview, IL
Wayne M. Goldstein, MD, Morton Grove, IL
Jeffrey M. Goldstein, MD, Deerfield, IL

We evaluated the biomechanical properties of a synthetic polyethylene graft for extensor mechanism reconstruction and compared them to biologic augmentation with Achilles tendon allograft.

Poster No. P0093
Synthetic Mesh Allograft Reconstruction for Extensor Mechanism Insufficiency after Knee Arthroplasty
Dexter Bateman, MD, Somerset, NJ
Jared Preston, MD, Somerset, NJ
Stephen Kayiaros, MD, Princeton, NJ
Alfred J. Tria, MD, Princeton, NJ

Synthetic mesh extensor mechanism reconstruction effectively restores knee function for a variety of extensor mechanism deficiencies following knee arthroplasty.

Poster No. P0094
What is the Value of Component Loosening Assessment of a Preoperatively Obtained Bone Scan Prior to Revision Total Knee Arthroplasty?
David Holst, MD, Denver, CO
Marc Angerame, MD, Denver, CO
Douglas A. Dennis, MD, Denver, CO
Jason M. Jennings, MD, Denver, CO

The correlations between preoperatively obtained radiologist report of bone scans, preoperatively documented surgeon predictions of component loosening, and operative report findings.

Poster No. P0095
What is the Effect of Manufacturer Changes in Tibial Tray Design of a Contemporary Total Knee Arthroplasty? A Retrieval Study
Johann Henckel, MD, London, United Kingdom
Arianna Cerquiglini, Stanmore, United Kingdom
Harry Hothi, BEng, MSc, Stanmore, United Kingdom
Antti Eskelinen, MD, PhD, Tampere, Finland
Lukas Bueel, Luzern, Switzerland
Michael T. Hirschmann, MD, Bruderholz, Switzerland
John Skinner, FRCS, London, United Kingdom
Alister Hart, FRCS, London, United Kingdom

Our retrieval study is the first to investigate the performance of a recently introduced TKA. We found no evidence of cement attachment to any tibial tray which may be linked to aseptic loosening.

Poster No. P0096
Can Bone Debris Impede the Seating of Cementless Tibial Trays?
Hugh L. Jones, Houston, TX
Rikin Patel, Houston, TX
Jonathan Gold, BS, Houston, TX
Philip C. Noble, PhD, Houston, TX

Accumulation of bone debris beneath fixation pegs within the tibial metaphysis can impede seating of cementless tibial trays, potentially affecting the stability of fixation of the tray.

Poster No. P0097
Rotating-Hinge Revision Total Knee Arthroplasty for Treatment of Malignant Arthrofibrosis
Joshua Bingham, MD, Rochester, MN
Brandon R. Bukowski, MD, Rochester, MN
Cody Wyles, MD, Rochester, MN
Ayoosh Pareek, MD, Rochester, MN
Daniel J. Berry, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN

In this limited series, patients with severe arthrofibrosis revised to a rotating-hinge TKA had a 20° improvement in their arc of motion with a lower MUA rate compared to 12° gained with a non-RH construct.
**Poster No. P0098**

**Periprosthetic Knee Infection Reconstruction with Hinged Prosthesis: Implant Survival and Risk Factors for Treatment Failure**

Michael Jian-Wen Chen, MD, Taoyuan City, Taiwan
Chih-Hsiang Chang, MD, Taoyuan County, Taiwan
Chun-Chien Chen, MD, Taoyuan, Taiwan
Chi-Chien Hu, Taoyun City, Taiwan
Wen-E Yang, MD, Kweishan, Taiwan
Pang-Hsin Hsieh, Taoyuan, Taiwan
Hsin-Nung Shih, MD, Taoyuan, Taiwan
Steve W. Ueng, MD, Taoyuan, Taiwan
Yuhan Chang, MD, PhD, Taoyuan, Taiwan

Using hinging prosthesis for knee reconstruction after PJI with severe bone and soft tissue defect may achieve an implant survivorship of 69.7% and infection-free survival of 60.6% at 5-year follow up.

**Poster No. P0099**

**Periprosthetic Joint Infection in Revision Total Knee Arthroplasty with Extensive Hardware - First Do No Harm!**

Jeffrey Barry, MD, Charlotte, NC
Michael Geary, MD, Charlotte, NC
Aldo M. Riesgo, MD, Weston, FL
Susan M. Odum, PhD, Charlotte, NC
Thomas K. Fehring, MD, Charlotte, NC
Bryan D. Springer, MD, Charlotte, NC

In PJI following rTKA with extensive hardware, I&D with chronic suppression appears as effective as 2-stage procedures in preventing reoperation for infection and maintaining ambulatory status.

**Poster No. P0100**

**The Presence of Sinus Tract Adversely Affects the Outcome of Treatment of Periprosthetic Joint Infections**

Chi Xu, MD, Beijing, People’s Republic of China
Qiaoqie Wang, Philadelphia, PA
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Karan Goswami, MD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study evaluated the effect of sinus tract in patients with PJI on the outcomes of two-stage exchange arthroplasty.

**Poster No. P0101**

**Symptomatic Benign Prostatic Hyperplasia Can Increase the Risk of Periprosthetic Joint Infection in Males Undergoing Total Joint Arthroplasty**

Hamidreza Yazdi, MD, Philadelphia, PA
Camilo Restrepo, MD, Philadelphia, PA
Leonard Gomella, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Symptomatic benign prostatic hyperplasia appears to be a strong risk factor for PJI after TJA.

**Poster No. P0102**

**New Musculoskeletal Infection Society Criteria Increases Preoperative Detection of Prosthetic Joint Infection by Greater Than Thirty Percent**

Stephen R. Rossman, DO, East Hanover, NJ
Joseph A. Ippolito, MD, West Orange, NJ
Edward Y. Cheng, MD, Minneapolis, MN

The findings of this study suggest that newly released MSIS criteria increases preoperative detection of PJI by greater than 30% compared to previous criteria.

**Poster No. P0103**

**Antibiotic Resistance Increases During Treatment of Prosthetic Joint Infection**

Sean P. Ryan, MD, Durham, NC
Cierra S. Hong, BA, Durham, NC
Michael A. Bergen, BS, Durham, NC
Daniel Goltz, MBA, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Infectious organism and antimicrobial resistance changes over time in a single cohort of arthroplasty patients with prosthetic joint infections.

**Poster No. P0104**

**Organism Profile Causing Periprosthetic Joint Infection: Is this Different in Total Hip Versus Total Knee Arthroplasty?**

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Hannah Groff, BA, Philadelphia, PA
Carol Foltz, PhD, Philadelphia, PA
Timothy Tan, MD, Philadelphia, PA
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Javad Parvizi, MD, FRCS, Philadelphia, PA

This study compared the organism profile of PJs after THAs with TKAs.

**Poster No. P0105**

**Aspirin Venous Thromboembolism Chemoprophylaxis is Effective after Revision Arthroplasty for Periprosthetic Joint Infection**

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Jacob L. Henrichsen, BS, Royal Oak, MI
Matthew Siljander, MD, Royal Oak, MI
Errin A. Baker, PhD, Royal Oak, MI
Corinn Gehrke, BS, Royal Oak, MI
Michael A. Flieri, MD, Troy, MI

This study aimed to determine the rate of venous thromboembolism as well as compare the efficacy of different anticoagulation regimens, in the postoperative setting of revision TJA for PJI.

**Poster No. P0106**

**Tranexamic Acid and Higher Preoperative Hemoglobin are Protective Against Periprosthetic Joint Infection in Aseptic Revision Arthroplasty**

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Carol Foltz, PhD, Philadelphia, PA
Andrew Sinensky, Philadelphia, PA
William T. Li, BS, Philadelphia, PA
Hamidreza Yazdi, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

The use of TXA during aseptic revision arthroplasty is protective against subsequent PJI. This study highlights the importance of perioperative blood management during revision TJA.

**Poster No. P0107**

**One- versus Two-Stage Revision Total Knee Arthroplasty: Outcomes in a Matched Cohort**

Nicole E. George, DO, Towson, MD
Chukwuweike U. Gwam, MD, Greenbelt, MD
Jennifer I. Etcheson, MD, MS, Baltimore, MD
Iciar M. Davila Castrodad, MD, Baltimore, MD
John Tarazi, MD, El Sobrante, CA
Stephen Casey, DO, Philadelphia, PA
Mark Kolich, DO, Massillon, OH
Ronald E. Delanois, MD, Baltimore, MD

Patients treated with one-stage revision TKA had decreased operative times, shorter LOS, and increased discharge to home than patients receiving two-stage TKAs, resulting in decreased hospital costs.
Technical Obstacles in Total Knee Arthroplasty Resident Education

Landon Brown, MD, Houston, TX
Kwan Park, MD, Houston, TX
Bradley Lambert, PhD, Missouri City, TX
Stephen J. Incavo, MD, Houston, TX

Primary total knee arthroplasty education is associated with a number of challenging technical steps for residents in training.

Valgus Angle Correction and Preoperative Valgus Angle are Radiographic Predictors of Common Peroneal Motor Nerve Injury After Primary Total Knee Arthroplasty

Yi-Loong C. Woon, MD, New York, NY
Stephen Lyman, PhD, New York, NY
Eric A. Bogner, MD, New York, NY
Alissa J. Burge, MD, New York, NY
Joseph Nguyen, MPH, New York, NY
Mayu Sasasaki, MPH, New York, NY
Taylor Cogslil, BA, New York, NY
Edwin P. Su, MD, New York, NY
Teena Shetty, MD, New York, NY

Preoperative valgus deformity may be the most important risk factor for common peroneal motor nerve injury and even small degrees of valgus may be clinically important.

Distribution of Non-Arthroplasty Osteoarthritis Costs Prior to Total Knee Arthroplasty

Hunter Warwick, BS, Durham, NC
Jonathan O'Donnell, MD, Durham, NC
Richard C. Mather, MD, Durham, NC
William A. Jiranek, MD, Durham, NC

We describe the variation in non-arthroplasty osteoarthritis costs and utilization for patients who eventually undergo total knee arthroplasty.

A 52-Week Randomized, Double-Blind Phase 2 Study of an Intra-Articular, Wnt Pathway Inhibitor (SM04690) for Osteoarthritis

Jeymi Tambiah, MD, San Diego, CA
Sarah Kennedy, PhD, Superior, CO
C. J. Swearingen, PhD, San Diego, CA
Ismail Simsek, MD, San Diego, CA
Andrews H. Gomoll, MD, New York, NY
Deryk G. Jones, MD, New Orleans, LA
Morgan H. Jones, MD, Cleveland Heights, OH
John A. Bergfeld, MD, Cleveland, OH

In a 52-week phase 2 trial of SM04690 (a Wnt pathway inhibitor for knee OA), 0.07 mg-treated unilateral symptomatic subjects showed improvements in symptoms and joint space width compared to placebo.

Higher Rate of Early Revision Following Primary Total Knee Arthroplasty in Patients Under Age 55: A Cautionary Tale

Ryan Charette, MD, Philadelphia, PA
Matthew Sloan, MD, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA

This is a retrospective review of patients under age 55 undergoing primary total knee arthroplasty and reports on the rate of early revision and perioperative complications.

Predicting Patient Dissatisfaction Following Total Joint Arthroplasty: A Review of 3,593 Hospital Consumer Assessment of Healthcare Providers and Systems Survey Responses

Tyler J. Vovos, MD, Durham, NC
Cierra S. Hong, BA, Durham, NC
Sean P. Ryan, MD, Durham, NC
Claire B. Howell, Durham, NC
Thomas Risoli, MS, Durham, NC
David E. Attarian, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

This retrospective review of 3,593 HCAHPS responses from hip and knee arthroplasty patients identifies several patient specific factors predictive of inpatient dissatisfaction.

The Use of Closed Suction Drain Does Not Influence Strength or Function in Primary Total Knee Arthroplasty: A Prospective Randomized Trial

Jason M. Jennings, MD, Denver, CO
Brian J. Loyd, DPT, PT, Aurora, CO
Todd Miner, MD, Denver, CO
Charlie C. Yang, MD, Denver, CO
Jennifer Stevens-Lapsley, PhD, PT, Aurora, CO
Douglas A. Dennis, MD, Denver, CO

The use of CSD during TKA did not influence quadriceps strength, quadriceps activation, intra-articular effusion, bioelectrical measure of swelling, ROM, or pain.

Complications Associated with Staged versus Simultaneous Bilateral Total Knee Arthroplasty

Shawn S. Richardson, MD, New York, NY
Cynthia A. Kahlenberg, MD, New York, NY
William W. Schairer, MD, New York, NY
Susan Goodman, MD, New York, NY
Thomas P. Sculco, MD, New York, NY
Mark P. Figgie, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Compared to staged bilateral TKR, simultaneous bilateral TKR resulted in increased risk of blood transfusion and readmission but decreased risk of mechanical complications and infection.

Total Joint Arthroplasty Outcomes in Patients with a Previous Failed Toxicology Screen: Giving Patients a Second Chance

George Yakubek, DO, Cleveland, OH
Carlos A. Higuera Rueda, MD, Weston, FL
Alison K. Klika, MS, Cleveland, OH
Trevor G. Murray, MD, Avon Lake, OH
Mhamad Faour, MD, Cleveland, OH
Juan S. Vargas Hernandez, MD, Rochester, MN

Patients who underwent TJA after having their original surgery canceled due to a positive toxicology screen had relatively high rates of postoperative complication highlighting the importance of addressing this modifiable risk factor.
Poster No. P0117
Total Knee Arthroplasty in Patients Less than 50 Years of Age: Results at a Mean of 13 Years
Vasili Karas, MD, Durham, NC
Tyler E. Calkins, BS, Morgantown, WV
Andrew J. Bryan, MD, Edina, MN
Chris Culvern, Chicago, IL
Richard A. Berger, MD, Chicago, IL
Aaron G. Rosenberg, MD, FACS, Chicago, IL
Denis Nam, MD, MSc, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL

At mean 13 years follow up patients <50yo at surgery have durable outcomes of primary TKA with tibial loosening and polyethylene wear as prominent issues.

Poster No. P0118
Total Knee Arthroplasty Outcomes in Medicare and Commercially Insured Patients
Hunter Starring, BS, Mandeville, LA
William H. Waddell, BS, New Orleans, LA
William M. Steward, New Orleans, LA
Stuart Schexnayder, BS, Ville Platte, LA
Jack E. McKay, MD, New Orleans, LA
Claudia Leonardi, Hammond, LA
Amy Bronstone, PhD, New Orleans, LA
Vinod Dasa, MD, New Orleans, LA

Medicare patients had more preoperative depression and anxiety as well as reported worse quality of life and activities of daily living at 6 and 12 months than commercially insured patients after TKA.

Poster No. P0119
Same Day and Delayed Hospital Discharge is Associated with Worse Outcomes Following Total Knee Arthroplasty
Lauren Nowak, MSc, Toronto, ON, Canada
Emil H. Schemitsch, MD, London, ON, Canada

In conclusion, discharge on days 1-2 postoperatively following TKA appears to have superior outcomes compared to discharge on the day of surgery, or on days 3-4.

Poster No. P0120
Inpatient versus Outpatient Arthroplasty: A Single-Surgeon Matched-Cohort Analysis of 90-Day Complications
Brian Darrith, Chicago, IL
Nicholas B. Frisch, MD, MBA, Bloomfield Hills, MI
Matthew W. Tetreault, MD, Chicago, IL
Michael P. Fice, BS, Chicago, IL
Chris Culvern, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL

This study suggests that arthroplasty procedures can be performed safely in an ambulatory surgery center among appropriately selected patients without an increased risk of complications.

Poster No. P0121
Area of Anterior Skin Numbness after Total Knee Arthroplasty: A Prospective Comparison Study between Diabetic and Non-Diabetic Patients
Ong-Art Phruetthiphat, MD, Bangkok, Thailand
Malee Chanpoo, PhD, Thailand, Thailand
John J. Callaghan, MD, Iowa City, IA

Duration of numbness recovery was significantly longer in diabetic patient. The longer incision proximal to upper pole patella more than 2 cm. should be avoided to prevent superolateral skin numbness.

Poster No. P0122
Do Nonagenarians with Knee Osteoarthritis Qualify for Total Knee Arthroplasty? Report on 329 Patients from a National Knee Arthroplasty Register
Erdem A. Sezgin, MD, Ankara, Turkey
Annette W-Dahl, PhD, Lund, Sweden
Otto Robertsson, MD, PhD, Reykjavik, Iceland
Lars Lidgren, MD, Lund, Sweden

Considering death rates, revision rates, and patient reported outcome measures; nonagenarians with knee osteoarthritis should not be deprived from the benefits of total knee arthroplasty.

Poster No. P0123
Preoperative Atrial Fibrillation is Associated with Increased Risk of 30 Day Readmission After Arthroplasty
Philip Aurigemma, MD, Shrewsbury, MA
Patricia Franklin, MD, MBA, Worcester, MA
Wenyun Yang, MS, Worcester, MA
Celeste Lemay, RN, MPH, Worcester, MA
David C. Ayers, MD, Worcester, MA

Preoperative atrial fibrillation is an independent risk factor for 30-day readmission after TJA, but does not appear to be a risk factor for poorer pain and function scores at one year.

Poster No. P0124
Marijuana Use Does Not Affect Outcomes After Total Knee Arthroplasty
Jason M. Jennings, MD, Denver, CO
Marc Angerame, MD, Denver, CO
Catie Eschen, Elizabeth, CO
Alexandra J. Phocas, BS, Denver, CO
Douglas A. Dennis, MD, Denver, CO

The purpose of this study was to report total knee arthroplasty (TKA) outcomes in patients using marijuana.

Poster No. P0125
Optimal Length of Stay Following Total Joint Arthroplasty to Reduce Readmission Rates
Patricia A. Kirkland, BS, Charleston, SC
William R. Barfield, PhD, Charleston, SC
Harry A. Demos, MD, Charleston, SC
Vincent D. Pellegrini, MD, Charleston, SC
Jacob M. Drew, MD, Boston, MA

Optimal length of stay following TJA is highly influenced by a patient’s overall health. For all but the sickest patients, longer stays are associated with increased readmission rates.

Poster No. P0126
The Natural History of Radiolucencies following Uncemented Total Knee Replacement at Nine Years
David F. Dalury, MD, Baltimore, MD
Danielle M. Chapman, Towson, MD
Timothy Costales, MD, Baltimore, MD

A group of un cemented TKR patients followed for 9 years showed no association between radiolucencies and long-term follow up.
Poster No. P0127
Contemporary Revision Total Knee Arthroplasty in Patients Less than Age 50: A High Risk of Rerevision by 10 Years
Brian Chalmers, MD, Rochester, MN
Graham Pallante, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
David G. Lewallen, MD, Rochester, MN
Mark W. Pagnano, MD, Rochester, MN
Robert T. Trousdale, MD, Rochester, MN
Patients ≤50 years undergoing contemporary revision TKA had a disappointingly low survivorship free of rerevision of 66% at 10 years, including a 7% rate of rerevision for PJI.

Poster No. P0128
Patient Acceptable Symptom State at One and Three Years After Total Knee Arthroplasty: Thresholds for the Knee Injury and Osteoarthritis Outcomes Score
James W. Connelly, BA, Boston, MA
Vincent Galea, BA, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
Sean J. Matuszak, BA, Boston, MA
Lina H. Ingelsrud, MSc, PT, Copenhagen, Denmark
Christian Skovgaard Nielsen, MD, Copenhagen, Denmark
Charles R. Bragdon, PhD, Boston, MA
James I. Huddleston, MD, Redwood City, CA
Henrik Malchau, MD, Cambridge, MA
Anders Troelsen, MD, PhD, Copenhagen, Denmark
This study presents patient acceptable symptom state thresholds for the KOOS and several other generic and knee-specific PROMs at one and three years after total knee arthroplasty.

Poster No. P0129
Collection of Patient-Reported Outcome Measures using a Digital Platform Based on the Innovative PROMIS System: First Results on Physical Function and Pain Interference after Total Knee Arthroplasty
Tim S. Waters, MBBS, FRCS (Ortho), Hertfordshire, United Kingdom
Michael D. Ries, MD, Reno, NV
Gorav Datta, Southampton, United Kingdom
Edward T. Davis, FRCS, Hagley, United Kingdom
Dinesh K Nathwani, MD, Middlesex, United Kingdom
Paul M. Sutton, Sheffield, United Kingdom
Beate Hanson, Cordova, TN
Amir Kamali, Cordova, TN
Iain McNamara, FRCS (Ortho), MA, Norwich, United Kingdom
An app to collect PROMs was recently adapted for TKA patients and tested in clinical setting. The interim analysis of 2 collected PROMs (Pain Interference, Physical Function) is presented here.

Poster No. P0130
PROMIS Physical Function Computerized Adaptive Tests Correlates with KOOS-JR in Patients with Knee Pain
Andrea Leyton-Mange, BA, Austin, TX
Joost Kortlever, MD, Austin, TX
Mark Keulen, MD, Doornrade, Netherlands
Tiffany Liu, San Francisco, CA
Stein Jasper Janssen, MD, Amsterdam, Netherlands
Kevin J. Bozic, MD, MBA, Austin, TX
W. R. Schultz, MD, Austin, TX
Kari Koenig, MD, MS, Austin, TX
The PROMIS Physical Function Computerized Adaptive Test (PROMIS PF CAT) correlates strongly with KOOS-JR and could be used to reduce question burden in patients with knee pain.

Poster No. P0131
Number of Stairs at Home Influences Discharge Disposition Following Total Knee Arthroplasty
Akshay Lanka, MBBS, MD, New York, NY
Taylor Murtaugh, BS, New York, NY
Emma Jennings, BS, New York, NY
Matthew S. Heller, BA, New York City, NY
Herbert J. Cooper, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Required stair entry, often an urban issue with walk-up apartments, impede home discharge after unilateral TKA.

Poster No. P0132
How Much Knee Motion Do I Need? Assessment of Knee Range of Motion During Daily Activities as Assessed by a Novel Gait Tracking Wearable Device
Alexander P. Sah, MD, Fremont, CA
Pablo Abad, PhD, San Francisco, CA
This novel tracking device provides knee ROM and gait analysis during real-life activities and can be useful for TKA patients by monitoring real-time progress, and objective measurements of outcomes.

Poster No. P0133
Relationship between the Patient-Reported Outcomes Measurement Information System (PROMIS) and Traditional Patient Reported Outcomes for Osteoarthritis
Raj Karia, MPH, New York, NY
Scott Friedlander, BA, MPH, New York, NY
Richard Iorio, MD, Boston, MA
James D. Slover, MD, New York, NY
Patient-Reported Outcomes Measurement Information System (PROMIS) did not have a strong correlation with the traditional patient-reported outcome instruments in an adult reconstructive clinic.

Poster No. P0134
Modifiable Risk Factors for Patient Dissatisfaction Following Total Joint Arthroplasty
Vincent Galea, BA, Boston, MA
James W. Connelly, BA, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
Sean J. Matuszak, BA, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
James I. Huddleston, MD, Redwood City, CA
Henrik Malchau, MD, Cambridge, MA
In this study, we present dissatisfaction frequencies at 1 and 3 years as well as modifiable risk factors for dissatisfaction for patients treated with THA and TKA.

Poster No. P0135
Single Surgeon Head-to-Head Comparison of Liposomal Bupivacaine vs. a Cocktail of Peri-Articular Injection Medications used in Primary Total Knee Arthroplasty
Charles B. Broome, MD, San Antonio, TX
Jonathan A. Schneider, DO, Las Cruces, NM
Single surgeon head-to-head comparison of liposomal bupivacaine vs. cocktail of peri-articular injection medications used in primary total knee arthroplasty. Is liposomal bupivacaine worth the cost?
Poster No. P0136
Total Knee Arthroplasty: Increased Conditional Risk of Recurring Complications with Contralateral Surgery

Trevor Grace, MD, San Francisco, CA
Ellen L. Tsay, BS, MS, San Francisco, CA
Heather Roberts, MD, San Francisco, CA
Thomas P. Vail, MD, San Francisco, CA
Derek Ward, MD, San Francisco, CA

The occurrence of complications after total knee arthroplasty is associated with a significantly increased risk of the same complication after replacement of the contralateral knee.

Poster No. P0137
Is More Information Better? A Randomized Comparative Effectiveness Trial of Two Decision Aids for Hip and Knee Osteoarthritis

Karen Sepucha, PhD, Boston, MA
Hany S. Bedair, MD, Boston, MA
Yuchiao Chang, Boston, MA
Maureen K. Dwyer, ATC, PhD, Newton, MA
Andrew A. Freiberg, MD, Boston, MA
Mahima Mangla, MPH, Boston, MA
Harry E. Rubash, MD, Marco Island, FL
Carl T. Talmo, MD, Boston, MA

The randomized trial compares the effectiveness of two interventions designed to improve informed decision making for primary hip and knee replacement surgery.

Poster No. P0138
Managing the Patella in Aseptic Revision Total Knee Arthroplasty – Should it be Revisited?

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Seyed Morteza Kazemi, Prof, Tehran, Iran
Hamed Vahedi Kafshgari, MD, Fulton, MD
Arash Aalirezaie, MD, Philadelphia, PA
Andrew Fleischman, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Revision or resurfacing of the patellar component in aseptic revision TKA is associated with better clinical outcome as determined by the patella score.

Poster No. P0139
Intramedullary Nail versus Locked Plate Fixation in the Treatment of Periprosthetic Fractures about Total Knee Arthroplasty: Is One Better than the Other?

Jay K. Shah, DO, Jersey City, NJ
Arianna Gianakos, DO, Jersey City, NJ
R. Sterling Haring, DO, MPH, Baltimore, MD
Richard S. Yoon, MD, Jersey City, NJ
Frank A. Liporace, MD, Englewood Clfs, NJ

Both intramedullary nail and locked plate fixation offer unique benefits in the treatment of periprosthetic distal femur fractures after total knee arthroplasty.

Poster No. P0140
Is the Time to Revision Surgery after Periprosthetic Fracture of the Knee Associated with the Rates of Postoperative Complications?

Venkat Boddapati, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY

Time to surgery > 24 hours after periprosthetic fracture of the knee is associated with an increased rate of surgical site and urinary tract infections, non-home discharge, but not higher mortality.

Poster No. P0141
Younger Patients Undergoing Total Knee Arthroplasty have Higher Complication Rates

Jason L. Bleivins, MD, New York, NY
Shawn S. Richardson, MD, New York, NY
Elizabeth Gausden, MD, New York, NY
Thomas P. Sculco, MD, New York, NY
Mark P. Figgie, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Younger patients undergoing total knee arthroplasty had higher early complication rates and lower revision free survival.

Poster No. P0142
Comparison of Implant Survivability in Total Knee Arthroplasty Among Opioid Abusers and Non-Opioid Abusers: A Retrospective Analysis

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Karim G. Sabee, MD, Miami, FL
Dhanur Damodar, MD, Miami, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Tsun Yee Law, MD, Fort Lauderdale, FL
Martin W. Roche, MD, Fort Lauderdale, FL

With the increasing prevalence of opioid abuse, the study illustrates short-term implant related complications orthopaedic surgeons may encounter in their practice.

Poster No. P0143
Utilization of Care following Total Knee Arthroplasty: The Impact of Patient Travel Distance to Hospital

Nicholas Kolodychuk, BS, MD, Gilbert, AZ
Michael Wong, River Ridge, LA
Tyler Adams, New Orleans, LA
Alaa E. Mohammed, MPH, New Orleans, LA
William H. Waddell, BS, New Orleans, LA
Bradford S. Waddell, MD, Greenwich, CT

Patient’s travel distance to undergo total knee arthroplasty impacts the pattern of their postoperative utilization of care.

Poster No. P0144
Reducing Discharge to Extended Care Facility Does Not Increase Readmission in Knee and Hip Arthroplasty Patients

Richard Hughes, PhD, Ann Arbor, MI
Huiyong Zheng, BA, MS, Ann Arbor, MI
Brian R. Hallstrom, MD, Ann Arbor, MI

As discharge to extended care facilities in Michigan has become less common, readmission has not increased for either knee or hip arthroplasty.

Poster No. P0145
Emergency Department Visit Within One Year Prior to Elective Total Knee Arthroplasty is Predictive of Postoperative Return to Emergency Department within 90 Days

Michael D. Gabbard, MD, Ferndale, MI
Michael A. Charters, MD, Northville, MI
Sean P. Mahoney, BS, Detroit, MI
Wayne T. North, MD, Grosse Pointe Woods, MI

Presentation to the ED is common prior to TKA and predictive of postoperative ED visit within 90 days. Preoperative visit frequency and proximity further increase a patient’s risk.
Aseptic Patellar Component Loosening
To Retain or Not? The Fate of Patellar Revision in Patients with Isolated
Poster No. P0150

Topical Vancomycin: An Economical Way to Reduce Prosthetic Joint
Infections in Primary Hip and Knee Arthroplasty
Paul Dicpinigaitis, Brookville, NY
Michael A. Miranda, DO, Tampa, FL
Ralph Rizk, DO, Largo, FL
Austin Schaff, DO, Largo, FL
Christopher Leibold, DO, Toledo, OH

Topical vancomycin with plain bone cement in primary TKA has shown promise in eliminating the need and cost of using antibiotic bone cement without increasing the risk and cost of treating PJIs.

Poster No. P0147

Infected Total Knee Arthroplasty Patients Implanted with Calcium Sulfate Beads Have Lower Reoperation Rates and Improved Infection Eradication
Nicole E. George, DO, Towson, MD
Chukwuweike U. Gwam, MD, Greenbelt, MD
Jennifer I. Etcheson, MD, MS, Baltimore, MD
Iciar M. Davila Castrodad, MD, Baltimore, MD
Nequeshah Mohamed, MD, Ajax, ON, Canada
Jeffrey J. Cherian, DO, Philadelphia, PA
Randle W. Ramsey, DO, Drexel Hill, PA
James Nace, DO, PT, Cockeysville, MD
Ronald E. Delanois, MD, Baltimore, MD

Patients implanted with antibiotic-impregnated calcium sulfate beads during two-stage revision TKA have higher successful reimplantation and lower reoperation rates, suggesting cost-effectiveness.

Poster No. P0148

Which of the Recommended Tests based on the 2018 Definition of Periprosthetic Joint Infection has the Best Performance?
Alisina Shahi, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

In this study we aimed to assess the performance of the diagnostic tests that are suggested by the 2018 definition of PJI. Serum D-dimer appeared to outperform the other tests.

Poster No. P0149

Does Prior Manipulation under Anesthesia (MUA) Predict Contralateral MUA in Patients undergoing Staged Bilateral Total Knee Arthroplasty?
Antonia F. Chen, MD, MBA, Newton, MA
Greg Kazarian, BA, Saint Louis, MO
Carl A. Deirmengian, MD, Wynnewood, PA

Patients who undergo staged bilateral total knee arthroplasty (TKA) and undergo one MUA prior to the second TKA are 9.5 times more likely to undergo a subsequent MUA.

Poster No. P0150

To Retain or Not? The Fate of Patellar Revision in Patients with Isolated Aseptic Patellar Component Loosening
Luis C. Grau, MD, Miami, FL
Fabio Orozco, MD, Margate City, NJ
Andres F. Duque, MD, MSc, Egg Harbor Township, NJ
David Bi, MSc, Galloway, NJ
Zachary D. Post, MD, Egg Harbor Township, NJ
Danielle Y. Ponzio, MD, Longport, NJ
Alvin C. Ong, MD, Linwood, NJ

Our experience shows that there is no need to revise all components to treat discomfort and pain secondary to patellar loosening as long as the femoral and tibial components are well positioned.

Complications Following Total Knee Arthroplasty in Inflammatory Arthritis versus Osteoarthritis
Shawn S. Richardson, MD, New York, NY
Cynthia A. Kahlenberg, MD, New York, NY
Susan Goodman, MD, New York, NY
Linda A. Russell, New York, NY
Thomas P. Sculco, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Mark P. Figgie, MD, New York, NY

Independent of other comorbidities, patients with inflammatory arthritis undergoing TKR are at high risk of transfusion, infection, and readmission.

Poster No. P0152

Outcomes of Primary Total Knee Arthroplasty in Patients with Ehlers-Danlos
Meagan E. Tibbo, MD, Rochester, MN
Cody Wyles, MD, Rochester, MN
Matthew T. Houdek, MD, Rochester, MN
Benjamin Wilke, MD, Jacksonville, FL

Patients with Ehlers-Danlos can expect reliable pain relief without increased risk of revision or reoperation after primary TKA. They are, however, more likely to require constrained components.

Poster No. P0153

Web-Based, Self-Directed Physical Therapy after Total Knee Arthroplasty is Safe and Effective for Most, but Not All, Patients
Mitchell R. Klement, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Richard McEntree, Philadelphia, PA
Max Greenky, MD, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA

Web-based self-directed physical therapy is safe and effective for most, but not all, patients eligible for home discharge after TKA.

Poster No. P0154

Antibiotic-Loaded Bone Cement in Primary Total Knee Arthroplasty: Utilization Patterns and Impact on Complications Using a National Database
Jimmy J. Chan, MD, Scarsdale, NY
Jonathan Robinson, MD, New York, NY
Jashvant Poeran, MD, PhD, New York, NY
Hsin-Hui Huang, MD, MS, New York, NY
Madhu Mazumdar, PhD, New York, NY
Leesa M. Galatz, MD, New York, NY
Darwin D. Chen, MD, New York, NY
Cali S. Moucha, MD, New York, NY

Nationwide database demonstrates 30% utilization rate of routine prophylactic use of antibiotic loaded cement in primary TKA. Increased odds for AKI but reduced odds for infection were found.

Poster No. P0155

Incisional Negative Pressure Wound Therapy Devices Improve Short-Term Wound Complications, but Not Long-Term Infection Rate Following Hip and Knee Arthroplasty
James A. Keeney, MD, Columbia, MO
Ajay Aggarwal, MD, Columbia, MO
James L. Cook, DVM, PhD, Columbia, MO
James P. Stannard, MD, Columbia, MO

This RCT reports lower short-term wound complications but similar infection rates when negative pressure wound therapy devices were used for management of hip and knee replacement incisions.
Reoperation Rates of Ankle Arthrodesis and Total Ankle Arthroplasty
Bryan G. Vopat, MD, Overland Park, KS
John P. Schroeppel, MD, Leawood, KS
Scott M. Mullen, MD, Leawood, KS
Armin Tarakemeh, BA, Kansas City, KS
Brandon L. Barnds, MD, Roeland Park, KS
Brandon L. Morris, MD, Roeland Park, KS
William Tucker, MD, Kansas City, KS

Type I diabetics have higher rates than type II, but they are closer in type II diabetics requiring insulin.

Diabetics have higher complication and revision rates than nondiabetics.

Charcot reconstruction is a cost-effective option from the healthcare system's standpoint in comparison to below-knee amputation when patients are expected to live at least 5 years postoperatively.

Total Contact Cast versus Traditional Dressing In Management of Neuropathic Foot Ulcers: A Prospective Study
Alok Prusty, MS, Burla, India
Biswajit Sahu, MS, Cuttack, India

TCC is a more effective method than dressing for treating diabetic plantar ulcers reducing the risks of amputation.

Charcot Foot Reconstruction versus Transtibial Amputation, or Bracing in Patients with Diabetes: A Cost-Effectiveness Analysis
Rachel Albright, DPM, North Chicago, IL
Dane K. Wukich, MD, Dallas, TX
David G. Armstrong, DPM, MD, Los Angeles, CA
Adam Fleischer, DPM, MPH, Vernon Hills, IL
Rachel Albright, DPM, North Chicago, IL

Charcot reconstruction is a cost-effective option from the healthcare system's standpoint in comparison to below-knee amputation when patients are expected to live at least 5 years postoperatively.

Total Contact Cast versus Traditional Dressing In Management of Neuropathic Foot Ulcers: A Prospective Study
Alok Prusty, MS, Burla, India
Biswajit Sahu, MS, Cuttack, India

TCC is a more effective method than dressing for treating diabetic plantar ulcers reducing the risks of amputation.

Charcot Foot Reconstruction versus Transtibial Amputation, or Bracing in Patients with Diabetes: A Cost-Effectiveness Analysis
Rachel Albright, DPM, North Chicago, IL
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Biswajit Sahu, MS, Cuttack, India

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Poster No. P0165
Financial Impact of MRI in the Treatment of Foot and Ankle Osteomyelitis
Cody S. Lee, BA, BS, Chicago, IL
Srikanth Divi, MD, Chicago, IL
Douglas R. Dirschl, MD, Chicago, IL
Kelly Hynes, MD, Chicago, IL

Our retrospective study of 543 patients with osteomyelitis found that patients who received MRIs had increased costs while receiving similar treatment compared to patients that did not receive MRIs.

Poster No. P0166
Prevalence of Neuropathic Pain in Foot and Ankle Patients
Eliezer Sidon, MD, Raanana, Israel
Annemarie Daecher, BS, Philadelphia, PA
Elizabethe L. McDonald, BA, Bryn Mawr, PA
Kristen Nicholson, PhD, Philadelphia, PA
Ryan G. Rogero, BS, Philadelphia, PA
Rachel Shakked, MD, Media, PA
Daniel J. Fuchs, MD, Philadelphia, PA
David I. Pedowitz, MD, MS, Villanova, PA
Steven M. Raikin, MD, Philadelphia, PA

A sizable proportion of patients with foot and ankle problems have a component of neuropathic pain (NP) and assessing for NP can aid in decision making about surgical intervention and pain management.

Poster No. P0167
Factors Affecting Fulfillment of Expectations After Foot and Ankle Surgery
Jensen Henry, MD, New York, NY
Andrew R. Roney, BA, New York, NY
Elizabeth Cody, MD, Durham, NC
Scott Ellis, MD, New York, NY

Most foot and ankle patients’ preoperative expectations were met or surpassed 2 years postoperatively, but greater expectations and worse function were associated with less expectation fulfillment.

Poster No. P0168
A Comparison of Lateralizing Calcaneal Osteotomies for Varus Hindfoot Correction
Tonya W. An, MD, Los Angeles, CA
Max P. Michalski, MD, Los Angeles, CA
Kyle S. Jansson, BSME, Wauwatosa, WI
Glenn B. Pleffer, MD, Los Angeles, CA

Cavovarus hindfoot deformity is multi-planar. Therefore, optimal correction requires heel laterization, combined with Dwyer wedge osteotomy and internal rotation in the coronal plane.

Poster No. P0169
Outcome after Surgical Treatment of Calcaneal Osteomyelitis
Felix Waibel, Zofikon, Switzerland
Alexander Klammer, Zollikerberg, Switzerland
Tobias Götschi, MSc, Zürich, Switzerland
Thomas Boeni, MD, Zurich, Switzerland
Martin Berli, MD, Zollikerberg, Switzerland

Secondary amputation rates after attempted limb saving surgery for calcaneal osteomyelitis are higher than previously thought while risk factors for secondary amputations could not be identified.

Poster No. P0170
Relationship Between Patient Expectation and Outcomes of Foot and Ankle Treatment
Man Hung, PhD, Salt Lake City, UT

Patient expectation at baseline had little impact on whether patients had improved 3-month and beyond outcomes in a general foot and ankle treatment clinic sample.

Poster No. P0171
Utilization and Impact of Social Media in Foot and Ankle Surgeon Practices
Garret Garafolo-Gonzalez, MD, Commack, NY
Justin Tsai, MD, Brooklyn, NY
Sheriff Akinleye, MD, Brooklyn, NY

Among all the platforms studied, a YouTube page is the most important social media platform to include in one’s digital presence.

Poster No. P0172
Weight-Bearing CT and MRI Findings of Stage II Flatfoot Deformity: Can We Predict Patients at High-Risk for Foot Collapse?
Cesar De Cesare Netto, MD, PhD, Baltimore, MD
Lauren Roberts, MD, Vancouver, BC, Canada
Guilherme Honda Saito, MD, São Paulo, Brazil
Ashraf Fansa, Tokyo, OH
Alessio Bernasconi, MD, Caserta, Italy
Carolyn M. Sofka, MD, New York, NY
Harry G. Greditzer, MD, MSc, New York, NY
Jonathan T. Deland, MD, New York, NY
Scott Ellis, MD, New York, NY

Our study is the first to evaluate correlation between bone, tendinous and ligamentous injury in AAFD patients, using WBCT and MR images.

Poster No. P0173
Does Hindfoot Fusion Impact Survival of Total Ankle Arthroplasty?
David E. Jaffe, MD, Scottsdale, AZ
David Vier, MD, Dallas, TX
Jalal Itani, BS, MS, Plano, TX
Daniel J. Fuchs, MD, Philadelphia, PA
James W. Brodsky, MD, Dallas, TX

The impact of hindfoot fusion on total ankle arthroplasty survival was evaluated. Hindfoot arthrodesis can be safely performed with TAA and is recommended in the setting of concomitant deformity.

Poster No. P0174
Driving After Total Ankle Arthroplasty
Elizabethe L. McDonald, BA, Bryn Mawr, PA
David I. Pedowitz, MD, MS, Villanova, PA
Rachel Shakked, MD, Media, PA
Joseph N. Daniel, DO, Stratford, NJ
Kristen Nicholson, PhD, Philadelphia, PA
Brian Winters, MD, Linwood, NJ
Steven M. Raikin, MD, Philadelphia, PA

Over 90% of patients may be eligible to return to driving as early as 6 weeks postoperatively, with brake reaction time normalizing 9 weeks after right total ankle arthroplasty.
Hand and Wrist

Poster No. P0175
Functional Outcome Risk Score for Total Ankle Arthroplasty
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Kristen Nicholson, PhD, Philadelphia, PA
Max Greenky, MD, Philadelphia, PA
Benjamin Hendy, MD, Philadelphia, PA
Abhay Mathur, BS, Philadelphia, PA
Ryan G. Rogero, BS, Philadelphia, PA
Rachel Shakked, MD, Media, PA
Steven M. Raikin, MD, Philadelphia, PA

Through the identification of independent patient factors, we have developed a novel functional outcome risk score for TAA that may help to better set patient expectations preoperatively.

Poster No. P0176
Targeted Muscle Reinnervation for Prosthesis Optimization and Neuraoma Management Following Transradial Amputation
Sarah Pierrie, MD, Charlotte, NC
Raymond G. Gaston, MD, Charlotte, NC
Michael S. Gart, MD, Charlotte, NC
Bryan J. Loefller, MD, Charlotte, NC

Forearm targeted muscle reinnervation has the potential to optimize myoelectric prosthesis use and alleviate neuraoma pain in patients with transradial amputations.

Poster No. P0177
Functional Outcome of Surgery in Basal Joint Arthritis
Henrik C. Baeker, MD, New York City, NY
Christina Freibott, BA, New York, NY
Samuel Galle, MD, New York, NY
Melvin P. Rosenwasser, MD, New York, NY

This study shows the reliability of the current gold standard to assess basal joint arthritis using the DASH score. We want to show the value of prediction for surgery of the score.

Poster No. P0178
Unplanned Early Reoperation Rate Following Thumb Basal Joint Arthroplasty
Jack Graham, BS, Philadelphia, PA
Michael Rivlin, MD, Philadelphia, PA
Asif M. Iyas, MD, Wayne, PA

In our series of nearly seven hundred consecutive cases, an unexpected reoperation rate of 1.5% was identified, with only a 0.6% reoperation rate specifically for painful subsidence.

Poster No. P0179
The Clinical Results of Arthroscopic Bone Grafting and Percutaneous K-Wires Fixation for Management of Scaphoid Nonunions
Young Keun Lee, PhD, Jeonju, Republic of Korea
Kwang Wook Choi, MD, Jeonju, Republic of Korea
Jee Gang Park, Cheong Ju, Republic of Korea

Arthroscopic bone grafting and percutaneous K-wires fixation is an effective treatment method for a scaphoid nonunion. I would like to thank professor PC Ho from the Chinese University of Hong Kong, who was my wrist arthroscopy teacher.

Poster No. P0180
Characterizing the Preoperative Profile and Short-Term Outcomes of Pediatric Patients Undergoing Surgical Correction for Congenital Hand Disorders: A Pediatric National Analysis from 2012-2016
Neil V. Shah, MD, MS, New York, NY
John P. Connors, BS, Brooklyn, NY
Marine Coste, BA, Brooklyn, NY
Priyanka Parmar, BS, New Hyde Park, NY
Colin M. White, Glen Cove, NY
Jared M. Newman, MD, Brooklyn, NY
Lesley N. Davidson, MD, Lexington, KY
Steven Koehler, MD, New York, NY

Pediatric patients who underwent surgical intervention for congenital hand disorders were more often male and white, aged 2 years at time of surgery, and experienced incisional SSI complications.

Poster No. P0181
Prevalence and Clinical Characteristics of Radiographic Central Triangular Fibrocartilage Complex Tears in Symptomatic and Asymptomatic Individuals Younger than 50 Years
Young Hak Roh, Seoul, Republic of Korea
Seok Woo Hong, MD, Seoul, Republic of Korea

Prevalence of central TFCC lesions detected on MRI in symptomatic patients seems to be similar to that in asymptomatic individuals.

Poster No. P0182
Influence of Body Mass Index on Distal Radius Fracture Outcomes
Abbas Peymani, MD, MS, Boston, MA
Matthew Hall, MD, Boston, MA
Peter J. Ostergaard, MD, Boston, MA
Arriyan S. Dowlatshahi, MD, Brookline, MA
Carl M. Harper, MD, Boston, MA
Brandon E. Earp, MD, Boston, MA
Tamara D. Rozental, MD, Boston, MA

The purpose of this study was to investigate the effect of BMI on outcomes following distal radius fractures. There is a significant association between obesity and worse functional outcomes.

Poster No. P0183
Complications of Low Profile Anatomic Plate Fixation of Phalanx Fractures
Evan M. Guerrero, MD, Durham, NC
Rita Baumgartner, MD, Durham, NC
Andrew E. Federer, MD, Durham, NC
Suhail K. Mithani, MD, Durham, NC
David S. Ruch, MD, Durham, NC
Marc J. Richard, MD, Durham, NC

Open reduction and internal fixation of phalanx fractures continue to have a high complication rate despite the advancements of low profile anatomic plates.

Poster No. P0184
Smoking Negatively Impacts Outcomes Following Open Reduction and Internal Fixation for Distal Radius Fractures
Peter J. Ostergaard, MD, Boston, MA
Matthew Hall, MD, Boston, MA
Abbas Peymani, MD, MS, Boston, MA
Carl M. Harper, MD, Boston, MA
Brandon E. Earp, MD, Boston, MA
Arriyan S. Dowlatshahi, MD, Brookline, MA
Tamara D. Rozental, MD, Boston, MA

Patients with past or current history of smoking showed a significantly increased QuickDASH score at last follow up following ORIF for a DRF, with no significant change in radiographic parameters.
Poster No. P0185
Hypoalbuminemia Predicts Postoperative Course following Surgery for Distal Radius Fractures
Jacob M. Wilson, MD, Atlanta, GA
Russell E. Holzgreve, MD, Atlanta, GA
Christopher A. Staley, BA, Atlanta, GA
Mara L. Schenker, MD, Atlanta, GA
Clifton Meals, MD, Atlanta, GA

In a review of 1,989 patients undergoing surgery for distal radius fracture, malnutrition was associated with higher risk of complication, readmission, reoperation, and increased length of stay.

Poster No. P0186
Risk Factors for Fracture Displacement in Conservative Treatment of Pediatric Distal Radius Incomplete Fracture without Manipulation
Souichi Ohta, MD, PhD, Kyoto, Japan
Ryosuke Ikeguchi, MD, Kyoto, Japan
Hiroki Oda, MD, Kyoto, Japan
Hiroyuki Yurie, Kyoto, Japan
Hisataka Takeuchi, MD, Kyoto City, Japan
Sadaki Mitsuzawa, Kyoto, Japan
Shuichi Matsuda, MD, Kyoto, Japan

Tension failure greenstick fractures and slightly z-folded concave side cortex are risk factors for displacement in conservative treatment of pediatric distal radius incomplete fracture without manipulation.

Poster No. P0187
Total Finger Arthroplasty Using Costal Osteochondral Autograft for Finger Joint Ankylosis: Mid- to Long-Term Clinical Outcomes Up to 11 Years of Follow Up
Kazuaki Sato, MD, PhD, Tokyo, Japan
Takui Iwamoto, MD, Tokyo, Japan
Noboru Matsumura, MD, Tokyo, Japan
Taku Suzuki, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan
Mori Matsumoto, MD, Tokyo, Japan

Total finger arthroplasty using costal osteochondral for finger joint ankylosis showed anatomical and biological reconstruction and provided stable improvement with a mean follow up of 77 months.

Poster No. P0188
Effect of Plate Design on Flexor Pollicis Longus Tendon Irritation after Volar Locked Plating of Distal Radius Fractures
Jeffrey G. Stepan, MD, MSc, New York, NY
Danielle C. Marshall, BA, New York, NY
Lauren E. Wessel, MD, New York, NY
Yosha Imada, MD, New York, NY
Theodore Miller, MD, New York, NY
Aoihe Macmahon, BA, New York, NY
Hayley Sacks, BA, Mamaroneck, NY
Andrew J. Weiland, MD, New York, NY
Lauren E. Wessel, MD, New York, NY

Using ultrasound evaluation, there was decreased plate-FPL tendon contact using FPL cutout volar plates but no difference in FPL irritation when compared to standard volar locked plates.

Poster No. P0189
Distal Radius Locking Bridge Plates: A Biomechanical Comparison
Asif M. Ilyas, MD, Wayne, PA

Anatomically designed low profile locking bridge plates with central screw holes failed earlier in both dynamic and static testing. Consideration should be given to avoid plates with central holes.

Poster No. P0190
Cost Savings of Carpal Tunnel Release Performed In-Clinic Compared to an Ambulatory Surgery Center: Time-Driven Activity-Based Costing
Melissa White, BA, Lakeville, MN
Kelsey Wise, MD, Minneapolis, MN
Harsh R. Parikh, Plymouth, MN
Sandy Yang, BA, St. Paul, MN
Christina M. Ward, MD, St. Paul, MN
Brian Cunningham, MD, St. Paul, MN

Clinic carpal-tunnel release (CTR), using WALANT techniques, resulted in much lower cost without influencing patient-reported pain when compared to CTR performed in an ambulatory surgery center (ASC).

Poster No. P0191
Ulnar Impaction Syndrome: Predictors of Pain Relief after Ulnar Shortening Osteotomy
Fiesky A. Nunez, MD, PhD, Cleveland, NC
Alejandro Marquez-Lara, MD, Winston-Salem, NC
Elizabeth A. Newman, MD, Winston-Salem, NC
Zhongyu J. Li, MD, Winston-Salem, NC
Fiesky A. Nunez, MD, Advance, NC

The complex relationship between patient and surgery specific factors associated with pain relief following ulnar shortening osteotomy for ulnar impaction syndrome are discussed.

Poster No. P0192
Open Seymour Fractures: A Retrospective Review of Treatment and Outcomes
Dawn Goral, BS, Aurora, CO
Jessica Wingfield, MD, Aurora, CO
Bryant Elrick, MS, Denver, CO
Christopher Chen, MD, Aurora, CO
Andy E. Laika, BS, Aurora, CO
Sarah E. Sibbel, MD, Denver, CO
Frank A. Scott, Aurora, CO

This study evaluated Seymour fractures at a level one pediatric trauma hospital. Delayed antibiotics were associated with increased infection rate. Timely antibiotic treatment reduces infections.

Poster No. P0193
Determining A Robust Minimal Clinically Important Difference in Patient-Reported Outcome Measurement Information System Physical Function, Upper Extremity, and Pain Interference in Patients Undergoing Carpal Tunnel Release
David Bernstein, MA, MBA, Rochester, NY
Jeff R. Houck, PhD, PT, Rochester, NY
Bilal Mahmood, MD, Rochester, NY
Constantinos Ketonis, MD, PhD, Webster, NY
Warren C. Hammert, MD, Rochester, NY

Patient-Reported Outcome Management Information System (PROMIS) Upper Extremity (UE) & Pain Interference (PI) Minimal Clinically Important Differences (MCID) are 2.95 and 3.05 for carpal tunnel release.

Poster No. P0194
Saline Load Test for Detecting Traumatic Arthroﬁmy in the Wrist
Nitin Goyal, MD, Chicago, IL
Daniel D. Bohl, MD, MPH, Chicago, IL
Rachel M. Frank, MD, Boulder, CO
William Stiuk, MD, Chicago, IL
John J. Fernandez, MD, Winnetka, IL
Mark S. Cohen, MD, Glencoe, IL
Robert W. Wysocki, MD, Chicago, IL

The saline load test to detect traumatic arthromy has not been studied in the wrist. In this study, the saline volume required to detect a dorsal wrist arthromy with 99% sensitivity was 2.5 mL.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0195
Biomechanical Strength of a Novel Tendon Splicing Open Book Technique Compared to the Pulvertaft Method using Unembalmed Human Cadaveric Tissue
Desirae McKee, MD, Lubbock, TX
Eric S. Wait, MD, Lubbock, TX
Micah L. Lierly, DPT, Lubbock, TX
Niloy Ghosh, BS, Amarillo, TX
Phillip S. Sizer, PhD, PT, Lubbock, TX
Kerry K. Gilbert, PT, Lubbock, TX
A smaller physical construct and non-significant biomechanical differences suggest the open book method is an acceptable surgical alternative to the Pulvertaft method for EIP to EPL tendon transfer.

Poster No. P0196
Is Surgery Needed for Desmoid Tumors (Aggressive Fibromatosis)? Results of Surgery to Improve Function
Benjamin Alman, MD, Durham, NC
Sean P. Ryan, MD, Durham, NC
Surgery to correct secondary contractures associated with desmoid tumor using a surgery distant to the primary tumor is a safe and effective method to improve joint function.

Poster No. P0197
Guanine Nucleotide-Binding Protein G(q) Alteration is Associated with Bone Metastasis through Regulation of Receptor Activator of Nuclear Factor Kappa-? Ligand in Human Non-Small Cell Lung Cancer
Ji-Yoon Choi, Seoul, Republic of Korea
Yunsun Lee, Seoul, Republic of Korea
Dami Shim, Seoul, Republic of Korea
Sung Wook Seo, MD, Seoul, Republic of Korea
Our study revealed an osteoclastogenesis-promoting role of the GNAQ in bone metastatic lung cancer and delineated the mechanism by which this specific gene achieved bone lesions.

Poster No. P0198
Postoperative Osteoarthritis Progression and its Risk Factors after Curettage of Giant Cell Tumor of Bone around Knee Joint
Yoshihiro Araki, MD, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kentaro Igarashi, MD, PhD, Kanazawa, Japan
Kensaku Abe, MD, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hirotaka Yonezawa, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Department of Orthopaedic Surgery Graduate School of Medicine Science Kanazawa University
We investigated the risk factors of progression of osteoarthritis change after curettage and bone graft for lesions of giant cell tumor of bone around knee joint.

Poster No. P0199
Utilizing a Novel Formulation of Niclosamide to Treat Metastatic Osteosarcoma
Gireesh B. Reddy, BS, Durham, NC
David Kerr, BA, Durham, NC
Artak Tovmasyan, PhD, Durham, NC
Prasad B. Walke, Odense, Denmark
David Hsu, MD, PhD, Durham, NC
Jason Somarelli, Durham, NC
David Needham, PhD, Durham, NC
William C. Eward, MD, Durham, NC
A novel nanoparticle formulation of niclosamide decreases intravital tumor burden in a mouse pulmonary metastasis model of osteosarcoma.

Poster No. P0200
Evaluating the Readability of Online Patient Education Materials Related to Orthopaedic Oncology
Ashok Para, Jersey City, NJ
Nicole D. Rynecki, BA, Manalapan, NJ
Franklin Thelmo, Philadelphia, PA
Brandon Zelman, Philadelphia, PA
Raghav Gupta, BS, Marlboro, NJ
Arpan V. Prabhu, MD, Pittsburgh, PA
Varun Ayyaswami, BS, Baltimore, MD
Joseph A. Ippolito, MD, West Orange, NJ
Kathleen S. Beebe, MD, Montclair, NJ
Current musculoskeletal oncology patient education materials are written significantly above the NIH- and AMA-recommended reading level. Modification is warranted to ensure informed decision making.

Poster No. P0201
Posterior Open Book Hemipelvectomy
Timothy Rapp, MD, New York, NY
John T. Stranix, MD, New York, NY
Neil M. Vranis, MD, New York, NY
Pierre Saadeh, New York, NY
We describe a novel surgical approach to the lateral pelvis that minimizes injury to the gluteal muscles, spares the gluteal vessels, and provides a broad yet shallow operative field for microsurgery.

Poster No. P0202
Mid-Term Follow Up of a Custom Non-Fluted Diaphyseal Press-Fit Tumor Prosthesis Stem
Julia D. Visgaard, MD, Durham, NC
David A. Wilson, MSc, MD, Hamilton, ON, Canada
David Perrin, MD, Toronto, ON, Canada
Anthony M. Griffin, MSc, Toronto, ON, Canada
Jay Wunder, MD, Toronto, ON, Canada
Peter Ferguson, MD, Toronto, ON, Canada
Mid-term follow up reveals success of a custom non-fluted diaphyseal press-fit stem with a tumor mega-prosthesis system.
Poster No. P0203
Frozen Autograft using Iodine-Coated Implants for Patients with Malignant Bone Tumors

Toshiharu Shirai, MD, Kyoto, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Ryu Terauchi, MD, PhD, Kyoto, Japan
Shinji Tsuchida, MD, PhD, Kyoto, Japan
Naoki Mizoshiri, Kyoto, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Toshikazu Kubo, MD, Kyoto, Japan

Frozen autograft combined with iodine-coated implants for patients with malignant bone tumor is a very useful method in which good limb function can be gained with minimized risk of infection.

Poster No. P0204
Total Scapulectomy and Shoulder Reconstruction using a Scapular Prosthetic and Constrained Reverse Shoulder Arthroplasty

Olga D. Savvidou, MD, Athens, Greece
Franceska Zampeli, MD, PhD, Amarousion, Greece
Panayiotis Megaloikonomos, Athens, Greece
Thekla Antoniadou, MD, Athens, Greece
Vasilios A. Kontogeorgakos, MD, Athens
Ioannis Papanastassiou, MD, Gerakas, Greece
Panayiotis J. Papagelopoulos, MD, Athens, Greece

We present the clinical outcome of patients with scapular tumors that underwent total scapulectomy and reconstruction with custom-made endoprosteses.

Poster No. P0205
Assessment of the Time to Treatment Initiation = 0 Cohort in Soft Tissue Sarcoma Patients at a Tertiary Cancer Center: Are We Defining this Correctly?

Joshua Lawrenz, MD, Cleveland Heights, OH
Jose F. Vega, BA, MA, Strongsville, OH
Jaiben George, MBBS, Cleveland, OH
Gannon Curtis, MD, Cleveland, OH
Jaymeson Gordon, Willowick, OH
Lukas M. Nystrom, MD, Cleveland, OH
Nathan W. Mesko, MD, Cleveland, OH

This analysis of a single institution registry suggests an underestimation of time to treatment duration in soft tissue sarcoma, with inaccuracies most common after incomplete excision procedures.

Poster No. P0206
The Intraoperative Use of Indocyanine Green Dye Results in Negative Surgical Margins and a Decrease in Local Recurrence Rate in an Orthotopic Mouse Model of Osteosarcoma

Alejandro Morales, MD, Pittsburgh, PA
Adel Mahjoub, BS, Pittsburgh, PA
Mitchell Fourman, MD, Pittsburgh, PA
Jonathan Mandell, BS, Gibsonia, PA
Feiqi Lu, Pittsburgh, PA
Rebecca J. Watters, PhD, Pittsburgh, PA
Kurt R. Weiss, MD, Pittsburgh, PA

Indocyanine green fluorescence intraoperative imaging can be used to guide and achieve negative surgical margins resulting in diminished recurrence rates.

Poster No. P0207
Prognostic Factors and Outcome in the Surgical Treatment of Low- and Intermediate Grade Chondrosarcoma of the Pelvis

Matthew T. Houdek, MD, Rochester, MN
Brent Witten, MD, Rochester, MN
Joshua Johnson, MD, Rochester, MN
Anthony M. Griffin, MSc, Toronto, ON, Canada
Doris Wenger, MD, Rochester, MN
Franklin H. Sim, MD, Rochester, MN
Jay Wunder, MD, Toronto, ON, Canada
Peter Ferguson, MD, Toronto, ON, Canada
Peter S. Rose, MD, Rochester, MN

Low and intermediate grade chondrosarcoma are the most common grades of chondrosarcoma of the pelvis. The results of this study indicate that in addition to the known impact of increased histological grade, patients older than 50 years are at increased risk.

Poster No. P0208
En Bloc Hemi-Vertebrectomy for the Treatment of Lumbar Spinal Tumors: A Prospective Evaluation of Postoperative Lower Limb Motor Function

Takaki Shinizu, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Satoshi Kato, MD, Kanazawa, Japan
Kazuya Shinmura, MD, Ishikawa, Japan
Noriaki Yokogawa, MD, Kanazawa, Japan
Norihiro Oku, MD, Kanazawa, Japan
Ryo Kitagawa, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

En bloc hemi-vertebrectomy of lumbar spine could minimize the postoperative muscle weakness. This is a useful procedure if the tumor is localized on unilateral side of the vertebra.

Poster No. P0209
Predictors of Surgical Site Infection After Orthopaedic Oncology Surgery

Alex Anatone, Lincoln, RI
Eugene S. Jang, MD, MS, New York, NY
Annie Smartt, BA, New York, NY
Matthew W. Konigsberg, MD, New York, NY
Nicholas C. Danford, New York, NY
Wakenda K. Tyler, MD, MPH, New York, NY

A retrospective, single institution review focused on identifying risk factors of surgical site infection in patients undergoing surgery for musculoskeletal tumors to aid in surgical decision making.

Poster No. P0210
A Novel Formulation of Niclosamide Treats Metastatic Osteosarcoma in Vivo

David Kerr, BA, Durham, NC
Artak Tovmasyan, PhD, Durham, NC
Prasad B. Walke, Odense, Denmark
Jason Somarelli, Durham, NC
David Hsu, MD, PhD, Durham, NC
Brian E. Brigman, MD, PhD, Durham, NC
Greg Palmer, PhD, Durham, NC
David Needham, PhD, Durham, NC
William C. Eward, MD, Durham, NC

Niclosamide-stearate nanoparticles are shown to be comparably effective to doxorubicin in treating metastatic osteosarcoma without the side effects associated with conventional therapies.
Poster No. P0211
Can EOS Imaging Substitute for Conventional Radiography in Measurement of Acetabular Morphology?
Jenna J. Powell, BS, Aurora, CO
Stephanie W. Mayer, MD, Aurora, CO
Courtney M. O’Donnell, MD, Denver, CO

EOS imaging may provide a safe way to evaluate pelvis measurements while reducing radiation exposure.

Poster No. P0212
Foam Padding in Postoperative Lower Extremity Casting: An Inexpensive Way to Protect Patients
Rajan Murgai, BS, Irvine, CA
Edward Compton, BS, Pasadena, CA
Akash Patel, BS, Lodi, CA
Deirdre D. Ryan, MD, Las Vegas, NV
Rachel Y. Goldstein, MD, Los Angeles, CA

The use of foam in postoperative lower extremity casting can reduce the incidence of skin complications in patients with static encephalopathy, in an A-frame cast, or in a long leg cast.

Poster No. P0213
Most Patients are Not Back to Normal Activities One Month Following Eight Plates
Hulaimatu Jalloh, BA, Los Angeles, CA
David L. Skaggs, MD, Los Angeles, CA
Peter M. Stevens, MD, Salt Lake City, UT
Stephanie M. Holmes, MD, Salt Lake City, UT
Victoria Heagy, BS, Salt Lake City, UT
Lindsay M. Anders, MD, Los Angeles, CA

At one month, a majority of patients who undergo 8-plate surgery had not returned to their preoperative activity level and many were still taking pain medications.

Poster No. P0214
Recurrence of Patella Instability in Adolescents Undergoing Surgery for Osteochondral Defects without Concomitant Ligament Reconstruction
Jason M. Pedowitz, BS, San Diego, CA
Eric W. Edmonds, MD, San Diego, CA
Henry G. Chambers, MD, San Diego, CA
Morgan Dennis, BS, San Diego, CA
Tracey Bastrom, MA, San Diego, CA
Andrew T. Pennock, MD, Rancho Santa Fe, CA

Patellofemoral instability patients undergoing surgery for an associated loose body are at high risk of recurrent instability when the MPFL is not reconstructed at the index procedure.

Poster No. P0215
Comparison of Prophylactic In-Situ Screw Fixation versus Observation of the Asymptomatic Contralateral Hip in Slipped Capital Femoral Epiphysis
Brian M. Haus, MD, Sacramento, CA
Lauren Agatstein, BA, MA, Sacramento, CA
Akash Patel, BS, Lodi, CA
Alton Skaggs, BS, Davis, CA
Jennette L. Boakes, MD, Sacramento, CA

Comparison of prophylactic in-situ screw fixation versus observation of the asymptomatic contralateral hip in slipped capital femoral epiphysis (SCFE).

Poster No. P0216
Risk of Growth Plate Damage in Physeal Fractures of Distal Tibia
Anti J. Stennos, MD, PhD, Washington, DC
Jenni Jalkanen, Kuopio, Finland
Topi Laaksonen, MD, Helsinki, Finland
Aarno Y. Nietosvaara, MD, Helsinki, Finland

We were able to show statistically significant relationships between the occurrence of PPC and a number of reduction attempts. That is one of the only variables that surgeons can affect.

Poster No. P0217
Novel Method Using Axial Oblique View of Computed Tomography with 2D Sections and 3D Reconstruction Techniques in Evaluating Anteversion of the Femur
Si Wook Lee, MD, Daegu, Republic of Korea
Ki-Choor Bae, MD, Daegu, Republic of Korea
Kyung-Jae Lee, MD, Daegu, Republic of Korea
Hyung Joo Kim, Daegu, Republic of Korea
Chulsoon Im, MD, Daegu, Republic of Korea

A novel method for measuring the femoral anteversion angle using the axial oblique section of the CT scan was found to be most closely approximating the real gross femoral anteversion representing femoral head to great trochanter.

Poster No. P0218
Fluoroscopy as Definitive Post-Reduction Imaging of Pediatric Wrist and Forearm Fractures is Safe and Saves Time
Avi Goodman, MD, Providence, RI
Devin F. Walsh, MD, Providence, RI
Mark Zonfrillo, MD, East Greenwich, RI
Craig P. Eberon, MD, Providence, RI
Aristides I. Cruz, MD, Walpole, MA

A protocol using mini C-arm fluoro for definitive post-reduction imaging after manipulation of a closed, isolated wrist or forearm fracture was safe and saved time compared to obtaining formal x-rays.

Poster No. P0219
Developmental Dysplasia of the Hip: Care Practices of Orthopaedic Surgeons in North America
Jessica F. Burlile, BA, BS, Washington, DC
Isabel K. Taylor, Boise, ID
Kishore Mulipuri, MBBS, MS, Vancouver, BC, Canada
Jeffrey Bone, MSc, Vancouver, BC, Canada
Emily Schaeffer, PhD, Vancouver, BC, Canada
Eva Habib, BS, Vancouver, BC, Canada
Lauren Vagelakos, MBA, MPH, Orlando, FL
Charles T. Price, MD, Orlando, FL
Kevin G. Sheu, MD, Boise, ID

POSNA members were queried about referral patterns, best practices, and imaging for developmental dysplasia of the hip. Care map implementation may decrease late referral of DDH.
**Poster No. P0220**
**Evaluation of Acetabular Coverage with Axial Magnetic Resonance Imaging is Useful for Prediction of Acetabular Growth in Patients with Developmental Dysplasia of the Hip**

Yuta Tsukagoshi, Tsukuba City, Japan
Hiroshi Kamada, MD, PhD, Tsukuba, Japan
Yohei Tomaru, MD, Tsukuba, Japan
Shogo Nakagawa, MD, Tsukuba, Japan
Ryoko Abe, MD, Aminami, Japan
Mio Onishi, Ibaraki, Japan
Tomofumi Nishino, Tsukuba, Japan
Masashi Yamazaki, MD, PhD, Tsukuba, Japan

Acetabular coverage with axial magnetic resonance imaging can predict acetabular growth in developmental dysplasia, and posterior coverage is important for pediatric acetabular growth.

**Poster No. P0221**
**The Effect of Expansion Thoracostomy on Spine Growth in Patients with Spinal Deformity and Fused Ribs Treated with Rib-Based Growing Constructs**

Fady Baky, Columbus, OH
A. Nuelle Larson, MD, Rochester, MN
Tricia St. Hilaire, MPH, Valley Forge, PA
Jeff Pawelek, San Diego, CA
David L. Skaggs, MD, Los Angeles, CA
John B. Emans, MD, Boston, MA
Joshua M. Pahys, MD, Wynnewood, PA
Children’s Spine Study Group
Growing Spine Study Group

Expansion thoracostomy at the time of rib expansion device implantation resulted in greater improvement in T1-S1 height over more lengthening procedures.

**Poster No. P0222**
**Pedicle Screw Plowing in Adolescent Idiopathic Scoliosis: How Common Is It, and Is It a Problem?**

Walter B. Klyce, BA, Baltimore, MD
Amit Jain, MD, Baltimore, MD
Stefan Parent, MD, Montreal, QC, Canada
Suken A. Shah, MD, Wilmington, DE
Patrick J. Cahill, MD, Philadelphia, PA
Stephen G. George, MD, Miami, FL
David H. Clements, MD, Camden, NJ
Vidyaadhav V. Upasani, MD, San Diego, CA
Burt Yaszay, MD, San Diego, CA
Firoz Miyanji, MD, Vancouver, BC, Canada
Michael P. Kelly, MD, Saint Louis, MO
Baron Lonner, MD, New York, NY
Peter S. Chang, MD, Irvington, NY
Chun Wai Hung, Fresh Meadows, NY
Megan Campbell, BA, Hampton, NJ
Hiroko Matsumoto, MA, New York, NY
Peter O. Newton, MD, San Diego, CA
Paul D. Sponseller, MD, Baltimore, MD
Harms Study Group

Craniocaudal plowing of pedicle screws occurs in 4.5% of AIS patients. It is associated with larger curves, lower screw density, and increased rates of revision surgery for loss of fixation to bone.

**Poster No. P0223**
**Major Perioperative Complications After Spinal Fusion Do Not Influence Health-Related Outcomes in Children with Cerebral Palsy**

Derek T. Nhan, BS, Baltimore, MD
Suken A. Shah, MD, Wilmington, DE
Amer Samdani, MD, Philadelphia, PA
Burt Yaszay, MD, San Diego, CA
Joshua M. Pahys, MD, Wynnewood, PA
Michelle Marks, PT, San Diego, CA
Paul D. Sponseller, MD, Baltimore, MD

Patients with CP who developed major periop complications had equivalent HRQLs at 2 years follow up compared to children without complications. Deep wound infections had the greatest impact on HRQLs.

**Poster No. P0224**
**Are We Obtaining Too Many Cervical CTs in Pediatric Trauma to Evaluate for a Subaxial Injury? A Quality, Safety, and Value Analysis**

David Gendelberg, MD, Seattle, WA
Amy M. Cizik, MPH, PhD, Seattle, WA
Quynh T. Nguyen, MSPh, PA-C, Seattle, WA
Richard J. Bransford, MD, Seattle, WA
Carlo Bellabarba, MD, Seattle, WA
Haitao Zhou, MD, Seattle, WA

The incidence of subaxial cervical injuries in patients 10-12 years old is 1.5%. Even though CT has a higher sensitivity than XR, this did not translate into a change in clinical management.

**Poster No. P0225**
**Safety of Tranexamic Acid Use in Pediatric Patients Undergoing Spinal Fusion Surgery**

Sariah Khormaee, MD, PhD, New York, NY
Abhinaba Chatterjee, New York, NY
Matthew Geiselmann, BA, Massapequa Park, NY
Peter S. Chang, MD, Saint Louis, MO
Hooman Kamel, New York, NY

In a large cohort of pediatric patients undergoing spinal fusion, there was not an increased rate of seizure, thromboembolic, or acute renal failure events associated with the use of tranexamic acid.

**Poster No. P0226**
**Magnetically Controlled Growing Rod Systems Have Higher Rate of Adverse Events Compared to Prosthetic Rib Constructs**

Michael G. Vitale, MD, MPH, Irvington, NY
Chun Wai Hung, Fresh Meadows, NY
Megan Campbell, BA, Hampton, NJ
Hiroko Matsumoto, MA, New York, NY
David P. Roye, MD, New York, NY
Benjamin D. Roye, MD, New York, NY

MCGR has 5.6 times higher hazards of device-related complications and 4.6 times higher hazards of unplanned return to OR compared to PRC in our institution after adjusting for cohort differences.
**Poster No. P0227**

**Predictors of Cost for Posterior Spine Fusion Surgery in Adolescent Idiopathic Scoliosis**

Fady Baky, Columbus, OH  
Scott R. Echtneract, BA, Rochester, NY  
Todd A. Milbrandt, MD, Rochester, MN  
Hilal Maradit-Kremers, MD, MSc, Rochester, MN  
Jeanine E. Ransom, Rochester, MN  
Dirk Larson, Rochester, MN  
Anthony A. Stans, MD, Rochester, MN  
William J. Shaughnessy, MD, Rochester, MN  
A. Noelle Larson, MD, Rochester, MN

Our study found that number of levels fused, curve magnitude, and specific Lenke curve types were all associated with increased hospital costs in adolescent idiopathic scoliosis surgery.

**Poster No. P0228**

**Even if Bracing Fails to Prevent Surgery, It May Benefit the Lumbar Spine in Adolescent Idiopathic Scoliosis**

Paul D. Sponseller, MD, Baltimore, MD  
Moustafa M. Abou Areda, BA, Brooklyn, NY  
Adam Margalit, MD, Baltimore, MD

Bracing may improve the lumbar spine in surgical adolescent idiopathic scoliosis patients, thereby extending the role of bracing to minimizing the amount of surgery needed to correct the scoliosis.

**Poster No. P0229**

**Novel Enhanced Recovery after Surgery Pathway Significantly Reduces Length of Stay in Adolescent Idiopathic Scoliosis Patients undergoing Posterior Spinal Fusion**

Michael C. Albert, MD, Dayton, OH  
Kristen O. Spisak, MD, MS, Dayton, OH  
Alvin C. Jones, MD, Dayton, OH  
Matthew D. Thomas, BS, Beavercreek, OH  
Zachary Sirois, BS, Moraine, OH  
Andrew Froehle, PhD, Dayton, OH  
Lucinda Brown, BSN, DNP, Dayton, OH  
James A. Clark, BS, Dayton, OH

Enhanced recovery after surgery protocol significantly reduces length of stay without an increase in opioid usage in patients undergoing posterior spinal fusion with adolescent idiopathic scoliosis.

**Poster No. P0230**

**Single Postoperative Spinal Hydromorphone Injection Reduces Length of Stay and Postoperative Narcotic Use**

Daniela Galeano Garces, MD, Rochester, MN  
Fady Baky, Columbus, OH  
William J. Shaughnessy, MD, Rochester, MN  
Anthony A. Stans, MD, Rochester, MN  
Dawit Haile, MD, Rochester, MN  
Todd A. Milbrandt, MD, Rochester, MN  
A. Noelle Larson, MD, Rochester, MN

A hydromorphone epidural injection provides better pain relief with highest effective periods in the first 24 hours and later between 72 and 96 hours after pediatric spine surgery.

**Poster No. P0231**

**Youth Baseball Coach Awareness of Pitch Count Guidelines and Overuse Throwing Injuries Remains Deficient**

Derrick Knapik, MD, Cleveland, OH  
Sara Continenza, BA, MD, Cincinnati, OH  
Kyle Hoffman, BS, Cincinnati, OH  
Allison Gilmore, MD, Shaker Heights, OH

Youth baseball coaches’ knowledge regarding pitch-count guidelines established to prevent shoulder and elbow overuse injuries in youth pitchers remains deficient.

**Poster No. P0232**

**Which Children are at Risk for Contralateral Anterior Cruciate Ligament Injury After Ipsilateral Reconstruction?**

Nakul S. Talathi, BS, Philadelphia, PA  
Neeraj M. Patel, MD, MPH, Philadelphia, PA  
Joshua Bram, BS, Philadelphia, PA  
Christopher J. Defrancesco, BS, Philadelphia, PA  
Theodore J. Ganley, MD, Philadelphia, PA

Females and children under 15 years of age are at increased risk of contralateral ACL rupture following ipsilateral ACL reconstruction in a pediatric population.

**Poster No. P0233**

**Incidence of Second Surgery after Medial Patellofemoral Ligament Reconstruction in the Pediatric Patient**

Daniel W. Green, MD, New York, NY  
Colleen Wixted, BS, Brooklyn, NY

MPFL reconstruction is a successful procedure in treating patellofemoral instability with low risk of returning to the operating room.

**Poster No. P0234**

**New Details About the Cellularity and Vascularity of the Developing Human Meniscus**

Melissa White, BA, Lakeville, MN  
William Fedje-Johnston, Saint Paul, MN  
Cathy S. Carlson, Saint Paul, MN  
Ferenc Toth, DVM, PhD, St Paul, MN  
Kevin G. Shea, MD, Boise, ID  
Marc Tompkins, MD, Minneapolis, MN

The vascular and cellular density of the entire meniscus decreased with increasing age and both vascularity and cellularity were significantly different between regions of the meniscus.

**Poster No. P0235**

**Short-Term Outcomes in Pediatric Patients Managed with Peripheral Nerve Blockade for Arthroscopic Anterior Cruciate Ligament Reconstruction and Meniscus Surgery**

Alexander J. Adams, BS, Philadelphia, PA  
Wallis T. Muhly, MD, Philadelphia, PA  
Harshad Gurnaney, MBBS, MPH, Philadelphia, PA  
Joy C. Kerr, Philadelphia, PA  
Julien Aoyama, BA, Philadelphia, PA  
Lawrence Wells, MD, Philadelphia, PA

Regional nerve blocks appear effective and safe as an analgesic strategy for pediatric arthroscopic knee surgery, with no short-term complications or readmissions and low pain levels after discharge.
Poster No. P0236
The Sensitivity and Specificity of Preoperative History, Physical Examination, and Magnetic Resonance Imaging to Predict Articular Cartilage Injuries in Symptomatic Discoid Lateral Meniscus

Nirav K. Pandya, MD, Oakland, CA
Brian Lau, MD, San Francisco, CA

Duration of symptoms greater than 6 months and extension block are key factors in predicting cartilage injury in patients with discoid lateral meniscus.

Poster No. P0237
Prospectively Calculated Utility Values and Health Related Quality of Life in Children with Osteochondritis Dissecans of the Knee

Benedict U. Nwachukwu, MD, MBA, New York, NY
Joshua Adjei, BA, ST, New York, NY
Yi Zhang, MS, New York, NY
Daniel W. Green, MD, New York, NY
Emily Dodwell, MD, New York, NY
Peter D. Fabricant, MD, MPH, New York, NY

Osteochondritis dissecans (OCD) lesions have an important impact on children's physical function and quality of life.

Poster No. P0238
Pediatric Septic Arthritis in the Hip or Knee: Differentiating Factors

Casey L. Smith, MD, Glendale, AZ
Jessica D. Burns, MD, Phoenix, AZ
Mohan V. Belthur, MD, Phoenix, AZ

This study validates the addition of CRP to the Kocher criteria and applies it to both septic hip and septic knee.

Poster No. P0239
Long-Term Results after Mini-Open (Leverage) Technique versus Arthroscopic Surgical Technique of Radial Neck Fractures in Children

Hyung Gyu Cho, MD, Iksan, Republic of Korea
Jeung Woo Kim, MD, Iksan, Republic of Korea
Hang Hwan Cho, Iksan, Republic of Korea
Sung Hyun Lee, MD, Go Yang Si, Republic of Korea
Seng Hwan Kook, Iksan, Republic of Korea
Suchyun Kweon, Iksan, Republic of Korea
Churi-Hong Chun, Iksan, Republic of Korea

Long-term results after mini-open (leverage) technique versus arthroscopic surgical technique of radial neck fractures in children.

Poster No. P0240
Simulation Training for Distal Radius Fracture Reduction Improves Outcomes in Children

Apurva Shah, MD, MBA, Philadelphia, PA
Taylor Jackson, El Paso, TX
John Todd R. Lawrence, MD, PhD, Wynnewood, PA

Simulation training with a distal radius fracture model significantly decreased loss of reduction, and may be an important training tool to maximize resident proficiency and improve patient outcomes.

Poster No. P0241
Opioid Prescribing Patterns Among Orthopaedic Surgeons: Analyzing the Medicare Population

Yung-Jae Lee, BA, Newark, NJ
Kamil Amer, MD, Clifton, NJ
Meghan M. Crippen, MS, Newark, NJ
Kathleen S. Beebe, MD, Montclair, NJ

Nearly half of all opioid-related deaths in 2015 were attributed to prescription drug overdoses. Our study seeks to evaluate opioid prescription patterns among practicing orthopaedic surgeons.

Poster No. P0242
Preoperative Opioid Use is Associated with Many Preoperative Predictors of Poor Outcome in the Trauma Patient Population

Boshen Liu, MD, Lexington, KY
John D. King, MD, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Paul E. Matuszewski, MD, Lexington, KY

Evaluate patient factors and postoperative complications between opioid naive and preoperative opioid use in orthopaedic trauma patient population.

Poster No. P0243
Wide-Awake Hand Surgery Decreases Overall Healthcare Spending while Improving Patient Satisfaction and Physician Reimbursement

Justin M. Rabinowitz, MD, Charleston, SC
Thomas Kelly, MD, Charleston, SC
Ann Peterson, NP, Charleston, SC
Eric W. Angermeyer, MD, Charleston, SC
Kyle P. Kokko, MD, Charleston, SC

A1 pulley release performed in office with patients wide-awake led to decreased healthcare costs while improving patient satisfaction and physician reimbursement.

Poster No. P0244
Personality of Patients with Intractable Chronic Pain Does Not Change after Treatment in Pain Liaison Outpatient Clinics

Tomoko Tetsunaga, MD, PhD, Okayama, Japan
Tomonori Tetsunaga, MD, Okayama City, Japan
Keiichiro Nishida, MD, Okayama, Japan
Toshifumi Ozaki, MD, Okayama, Japan

Treatment in the pain liaison outpatient clinic improved depression and pain catastrophizing deprived of intractable chronic pain, but patients’ personality remained unchanged after treatment.

Poster No. P0245
Early Results of a Longitudinal, Comprehensive Lifestyle and Behavioral Health Management Program for Osteoarthritis

Jonathan O’Donnell, MD, Durham, NC
Trevor Lentz, MPH, PhD, Durham, NC
Morven A. Ross, DPT, PT, Durham, NC
William A. Jiranek, MD, Durham, NC
Richard C. Mather, MD, Durham, NC

Preliminary results of a longitudinal, comprehensive lifestyle and behavioral health modification program for hip and knee osteoarthritis shows improvements in patient-reported function and distress.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0246
Patient Subgrouping to Inform Treatment Pathway Development for a Comprehensive Osteoarthritis Care Program
Trevor Lentz, MPH, PhD, Durham, NC
Jonathan O'Donnell, MD, Durham, NC
Morven A. Ross, DPT, PT, Durham, NC
William A. Jiranek, MD, Durham, NC
Richard C. Mather, MD, Durham, NC

This study identifies characteristics of four distinct patient subgroups presenting to a comprehensive nonoperative care program in a large, academic health system.

Poster No. P0247
Correlation between Surgeon-Dependent and Surgeon-Independent Online Ratings
Orrin Franko, MD, Danville, CA

Contrary to the existing literature, surgeon-dependent factors account for 87% of online review ratings even when specifically addressing nonsurgeon determined categories.

Poster No. P0248
Musculoskeletal Ultrasound - Unveiling its Vast Potential to Popularize it in Medically Developing Countries in Contrast to MRI for Mass Diagnostic Use and Guided Procedures
Kapil Bakshi, MS, Khorfakkan, United Arab Emirates
Sushma Bakshi, MBBS, MD, Khorfakkan, United Arab Emirates

Musculoskeletal ultrasound imaging helps to consolidate diagnosis, save time and cost. It promotes precision and efficiency in guided procedures improving clinical outcome leading to higher cure rate.

Poster No. P0249
Depression and Anxiety Closely Correlate with Shoulder Osteoarthritis Pain and Function
Carolyn Hettrich, MD, MPH, Lexington, KY
Nicole G. Cascia, ATC, Lexington, KY
Oliver A. Silverson, ATC, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Tim L. Uhl, PhD, ATC, Lexington, KY

Depression and anxiety are associated with worse pain and patient-reported function for patients with end-stage shoulder osteoarthritis. These results can help streamline preoperative data collection.

Poster No. P0250
Factors Associated with Emergency or Urgent Care Visits Following Outpatient Orthopaedic Trauma Surgery
Lauren C. Zurek, MD, Minneapolis, MN
Benjamin Williams, MD, Minneapolis, MN
Harsh R. Parikh, Plymouth, MN
Sandy Vang, BA, St Paul, MN
Brian Cunningham, MD, Saint Paul, MN
Marc F. Swiontkowski, MD, Minneapolis, MN

Unexpected healthcare visits are predominately amenable with intervention. This study identifies attributes that are at high-risk for utilizing unplanned healthcare services after outpatient surgery.

Poster No. P0251
Are We Overprescribing Opioids for Adolescents with Lower Extremity Fractures? Preliminary Results from a Randomized Controlled Trial at a Level I Pediatric Trauma Facility
Arianna Trionfo, MD, Philadelphia, PA
Keith D. Baldwin, MD, Philadelphia, PA
Matthew Buczek, BS, Philadelphia, PA
Apurv Shah, MD, MBA, Philadelphia, PA

After surgical fixation of lower extremity fractures in adolescents, on average 5 times more opioid tablets are prescribed than are necessary to adequately control pain.

Poster No. P0252
Intra-Articular Hyaluronic Injection for Knee Osteoarthritis Did Not Change Inflammatory Cytokines in Synovial Fluid but Improved Functional Outcomes
Aree Tanavalee, MD, Bangkok, Thailand
Sritithat Tangwitthayaphum, MD, MMED, Bangkok, Thailand
Niti Kanjanasingh, MD, MMED, Chachoengsao, Thailand
Pariwat Taweekitikul, Bangkok, Thailand
Nikit Noree, MD, MMED, Bangkok, Thailand
Srithatch G. Ngarmukos, MD, Bangkok, Thailand

We concluded that although intra-articular hyaluronic injection for mild to moderate knee OA improved functional outcomes, it did not change inflammatory cytokines in synovial fluid.

Poster No. P0253
Visit Duration Does Not Correlate with Patient Perceived Empathy
John Kortlever, MD, Austin, TX
Janna S. Ottenhoff, MD, Austin, TX
Gregg A. Vagner, MD, Austin, TX
David C. Ring, MD, Austin, TX
Lee M. Reichel, MD, Austin, TX

This study looked to assess the relations between office times (wait time and visit time) and perceived empathy. Neither was to be associated suggesting it depends more on quality of the visit.

Poster No. P0254
Fluoroquinolone Use is Significantly Associated with Tendinitis and Tendon Rupture in Multiple Joints
Antonia Lin, Chicago, IL
Michael J. Lee, MD, Chicago, IL
Lewis L. Shi, MD, Chicago, IL

Risk of tendinopathy and tendon rupture following fluoroquinolone use is significantly elevated in many parts of the body, especially the rotator cuff; effects may not be seen until months after use.

Poster No. P0255
Which Academic Orthopaedic Subspecialties Received the Highest Compensation from Industry?
Lauren J. Seo, BA, New York, NY
Leah Gonzalez, BS, New York, NY
Lynn Ann Forrester, BA, New York, NY
Chukwuemeka F. Egeruoh, Laurelton, NY
Alice Chu, MD, Livingston, NJ

Within this database, the largest payments from industry go to shoulder, spine, trauma, and arthroplasty surgeons. The lowest payments go to orthopaedic oncologists, hand, and pediatric orthopaedists.
Poster No. P0256
Poorly Cited Articles in Peer-Reviewed Orthopaedic Journals

Thi Thu Huyen Tran, Austin, TX
Joost Kortlever, MD, Austin, TX
David C. Ring, MD, Austin, TX
Mariano Menendez, MD, Boston, MA

This study looked at the rates of poorly and well cited orthopaedic articles and journals over the years. We found that more than a third of articles are poorly cited after publication.

Poster No. P0257
What is the Unconscious Bias of Patients About Treatment?

Joost Kortlever, MD, Austin, TX
Janna S. Ottenhoff, MD, Austin, TX
Thi Thu Huyen Tran, Austin, TX
David C. Ring, MD, Austin, TX
Gregg A. Vagner, MD, Austin, TX
Matthew D. Driscoll, MD, Austin, TX

We looked at patient bias toward treatment and support using the Implicit Association Test (IAT). Patients receiving biomedical and biopsychosocial treatment showed more bias for support+good care.

Poster No. P0258
Orthopaedic Surgery Patients Who Use Recreational Marijuana Have Less Preoperative Pain

Shaun H. Medina, BA, Baltimore, MD
Vidushan Nadarajah, BA, Brooklyn, NY
Julio J. Jauregui, MD, Baltimore, MD
Michael P. Smuda, ATC, MS, Baltimore, MD
Michael Foster, MD, Baltimore, MD
Sean Meredith, Baltimore, MD
Jonathan D. Packer, MD, Baltimore, MD
R Frank Henn, MD, Eliott City, MD

This study determined recreational marijuana users undergoing orthopaedic surgery had lower pain scores in the operative site and had higher activity rating scores for the lower extremity.

Poster No. P0259
Publication Bias is Underreported in High Impact Orthopaedic Surgery Systematic Reviews and Meta-Analyses

Jared T. Scott, BS, Tulsa, OK
Craig Cooper, BS, Tulsa, OK
Jake Checketts, Jenks, OK
Marshall A. Boone, DO, Tulsa, OK
Matt Vassar, PhD, Tulsa, OK

This study evaluated publication bias rates in high impact orthopaedic surgery literature.

Poster No. P0260
Mesenchymal Stem Cells Delivered in a Novel Injectable Hydrogel for the Treatment of Focal Chondral Lesions in an Equine Animal Model

Cecilia Pascual-Garrido, MD, Saint Louis, MO
Francisco Rodriguez Fontan, MD, Lakewood, CO
Masahiko Haneda, MD, PhD, Saint Louis, MO
Karim A. Payne, PhD, Aurora, CO
Elizabeth Aisenbrey, PhD, Madison, WI
John D. Kisiday, PhD, Fort Collins, CO
Stephanie J. Bryant, Boulder, CO
Jennifer Phillips, BS, Fort Collins, CO

Delivery of stem cells in a novel injectable photopolymerize hydrogel provides chondrogenic cues for cartilage repair in a large equine animal model.

Poster No. P0261
To Evaluate the Outcome of Autogenous Growth Factor Rich Plasma Injection vis-a-vis Saline Knee Lavage in Osteoarthritis Knee

Yuvaraj S. Hira, MS, Chandigarh, India

Growth factor rich plasma can play a groundbreaking role in treatment of knee osteoarthritis in terms of cost-effectiveness and post-op care if diagnosed early.

Poster No. P0262
Cervical Spine Disease in Orthopaedic Surgeons

Ronald W. Wyatt, MD, Walnut Creek, CA
Charles Lin, BS, Orange, CA
Elizabeth P. Norheim, MD, Los Angeles, CA
Diane Przepiorksi, Exec Dir, Sacramento, CA
Ronald A. Navarro, MD, Rolling Hills, CA

Neck pain and cervical radiculopathy in orthopaedic surgeons is associated with older age, high stress levels, and performing arthroscopy over an extended period of time.

Poster No. P0263
Higher Hospital Costs Do Not Result in Lower Readmission Rates Following Total Joint Arthroplasty

Lorraine Hutzler, BA, New York, NY
Michael S. Day, MD, Chambersburg, PA
Raj Karia, MPH, New York, NY
Joseph A. Bosco III, MD, New York, NY

Readmission rates vary independent of volume of procedures performed.

Poster No. P0264
Mesenchymal Stem Cells Delivered in a Novel Injectable Hydrogel for the Treatment of Focal Chondral Lesions

Francisco Rodriguez Fontan, MD, Lakewood, CO
Karim A. Payne, PhD, Aurora, CO
Elizabeth Aisenbrey, PhD, Madison, WI
Stephanie J. Bryant, Boulder, CO
Laurie R. Goodrich, DVM, PhD, Fort Collins, CO
Cecilia Pascual-Garrido, MD, Saint Louis, MO

MSCs delivered in an injectable novel photopolymerize hydrogel provides chondrogenic cues for cartilage repair.

Poster No. P0265
Orthopaedic Implant Cost Perceptions among Surgeons and Healthcare Administrators

Harsh R. Parikh, Plymouth, MN
Melissa White, BA, Lakeville, MN
Sandy Yang, BA, St Paul, MN
Peter A. Cole, MD, Saint Paul, MN
Brian Cunningham, MD, Saint Paul, MN

Implant cost awareness offers a preliminary avenue toward opening a dialogue to encourage fiscal responsibility at all levels of the healthcare system.

Poster No. P0266
Transcriptional Error Rates in Retrospective Chart Reviews

James Feng, MD, New York, NY
Afschin Anoushiravani, MD, New York, NY
Lidia Ani, Bay Shore, NY
Daniel Waren, MSPH, New York, NY
Philipp Leucht, MD, New York City, NY

Traditional manual chart reviews demonstrated a conservative estimated transcriptional error rate of 10% distorting clinical study results and the incidence of type I and type II errors.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Regional Differences in Promotion and Productivity in Academic Orthopaedic Surgery

Lynn Ann Forrester, BA, New York, NY
Lauren J. Seo, BA, New York, NY
Leah Gonzalez, BS, New York, NY
Chukwuemeka F. Egeruoh, Laurelton, NY
Alice Chu, MD, Livingston, NJ

Comparison of regional USA orthopaedic surgery programs (northeast, south, west, and midwest) demonstrated that surgeons in the south had higher academic ranks and those in the west had lower scholarly productivity.

Measurable Balance Ability is Significantly Associated with the Incidence and Prevalence of Slip, Trip, and Fall Accident among Workers – A Two-Year Cohort Study of 18,475 Subjects

Hajime Utsunomiya, MD, PhD, Vail, CO
Yusaku Morita, MD, Tokyo, Japan
Eichihiro Nakamura, MD, PhD, Kitakyushu, Japan
Soshi Uchida, MD, PhD, Kitakyushu, Japan
Akinori Sakai, MD, PhD, Kitakyushu, Japan
Toshiaki Miyamoto, MD, PhD, Kitakyushu, Japan

Impaired balance ability measured on Y-balance test and single-leg standing test on balance disc were detected as significant risk factors of slip, trip, and fall accidents among workers.

Postoperative Arthroplasty Outcomes are Unchanged by Secure Messaging

Sean P. Ryan, MD, Durham, NC
Michael A. Bergen, BS, Durham, NC
Cierra S. Hong, BA, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Secure messaging communication is under-utilized by high risk patients, and postoperative outcomes are not changed by this electronic resource connecting patients to their provider.

Active is Better than Passive Review Requests to Increase Online Physician Ratings

Orrin Franko, MD, Danville, CA

Surgeons and practices can increase their online ratings by requesting online reviews actively (verbally) or passively (emails), but active requests are 6 times more effective.

Randomized Prospective Trial of Arthroscopic Rotator Cuff with or without Acromioplasty: No Difference in Patient-Reported Outcomes at Long-Term Follow Up

Brian R. Waterman, MD, Winston-Salem, NC
Jon M. Newgren, MA, Chicago, IL
Anirudh K. Gowd, Cary, NC
Brandon C. Cabarcas, BS, Hialeah, FL
Drew Lansdown, MD, San Francisco, CA
Bernard R. Bach, MD, River Forest, IL
Brian J. Cole, MD, MBA, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL

Long-term results of a randomized controlled trial suggest that rotator cuff repair with concomitant acromioplasty provides no measurable difference in patient reported outcomes or retear rates.

Role of MMP-2 and MMP-9 in the Development of Frozen Shoulder: Human Data and Experimental Analysis in a Rat Contracture Model

Chul-Hyun Cho, MD, PhD, Daegu, Republic of Korea
Kwang Soon Song, MD, Daegu, Republic of Korea
Byung-Woo Min, MD, Daegu, Republic of Korea
Ki-Cher Bae, MD, Daegu, Republic of Korea
Kyung-Jae Lee, MD, Daegu, Republic of Korea
Si Wook Lee, MD, Daegu, Republic of Korea

The results from both human and animal studies suggest the involvement of MMP-2 and MMP-9 in the development of FS.

Impact of Scapular Notching on Reverse Total Shoulder Arthroplasty Outcomes – Five-Year Minimum Follow Up

Ryan W. Simovitch, MD, Palm Bch Gdns, FL
Joseph D. Zuckerman, MD, New York City, NY
Thomas W. Wright, MD, Gainesville, FL
Pierre-Henri Flurin, MD, Mergignac, France
Christopher Roche, MS, MBA, Gainesville, FL

Inferior scapular notching is associated with a statistically significant degradation of clinical outcomes and range of motion compared to patients with an absence of scapular notching.

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Michael A. Bergen, BS, Durham, NC
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Nikhil N. Verma, MD, Chicago, IL

Long-term results of a randomized controlled trial suggest that rotator cuff repair with concomitant acromioplasty provides no measurable difference in patient reported outcomes or retear rates.
**Poster No. P0277**
A Prospective Gender Matched Comparison of Hybrid Cage Glenoids Compared to Cemented Polyethylene Peg Glenoids in Anatomic Total Shoulder Arthroplasty

Richard J. Friedman, MD, Charleston, SC
Emilie V. Cheung, MD, Redwood City, CA
Sean G. Grey, MD, Fort Collins, CO
Pierre-Henri Flurin, MD, Mergignac, France
Thomas W. Wright, MD, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY
Christopher Roche, MS, MBA, Gainesville, FL

There was a significant decreased incidence of radiolucent lines and line grades following implantation of a cage glenoid relative to cemented peg glenoid, along with a lower incidence of humeral RLL.

**Poster No. P0278**
Comparison of Total Shoulder Arthroplasty Outcomes Among Premorbid Concentric and Eccentric Glenoid Wear Patterns

Jonathan C. Levy, MD, Ft Lauderdale, FL
Derek Berglund, MD, Fort Lauderdale, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Dimitri S. Tahal, MD, MSc, Miami, FL
Dragomir Mijic, DO, Madison Heights, MI

Eccentric glenoid wear patterns have lower improvement in ASES scores and forward elevation at an average of 47 months post-op. No difference in pre-op fatty infiltration was observed.

**Poster No. P0279**
Do Uncemented Humeral Stem Lucencies Affect Clinical Outcomes in Anatomic Shoulder Arthroplasty?

Joseph J. King, MD, Gainesville, FL
Thomas W. Wright, MD, Gainesville, FL
Gregory Y. Lachaud, MD, Gainesville, FL
Christopher Roche, MS, MBA, Gainesville, FL
Pierre-Henri Flurin, MD, Mergignac, France
Joseph D. Zuckerman, MD, New York City, NY
Bradley S. Schoch, MD, Gainesville, FL

Humeral lucent lines were present in 13.1% of uncemented aTSA at 5-yr min follow up. Humeral lucent lines have a slight negative effect on outcomes and are associated with a higher complication rate.

**Poster No. P0280**

Gregory L. Cvetanovich, MD, Columbus, OH
Brandon C. Cabarcas, BS, Hialeah, FL
Alejandro Espinoza, PhD, Chicago, IL
Joseph Liu, MD, Chicago, IL
Ani Gowd, BS, Cary, NC
Nozomu Inoue, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL

A 3D-printed, patient-specific guide for TSA glenoid guide pin placement improved accuracy of glenoid pin placement based on 3D-CT measurements compared to standard TSA guides in a cadaveric model.

**Poster No. P0281**
Mapping Physical Functions of the Shoulder to ASES and PROMIS Scores

Aaron Roberts, MD, Rochester, NY
Ilya Voloshin, MD, Rochester, NY

Specific shoulder physical functions were mapped to ASES, PROMIS PF, and PROMIS PI scores. These maps may help a clinician answer the question, “Will I be able to reach a shelf after surgery?”

**Poster No. P0282**
Anatomic vs. Reverse Shoulder Arthroplasty: A Mid-Term Follow-Up Comparison

Bradley S. Schoch, MD, Gainesville, FL
Joseph J. King, MD, Gainesville, FL
Thomas W. Wright, MD, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY
Christopher Roche, MS, MBA, Gainesville, FL
Pierre-Henri Flurin, MD, Mergignac, France

At mid-term follow up, RSA produces similar results to TSA in regard to patient reported outcomes; however, complication and reoperation are lower in the RSA group.

**Poster No. P0283**
◆ Biologic Resurfacing of the Glenoid for Patients Age 60 Years and Younger with Glenohumeral Arthritis

Armados M. Hatizidakis, MD, Denver, CO
Jacqueline Bader, MS, Denver, CO
Libby Mauter, MS, PT, Denver, CO
Ashley M. Dillon, Denver, CO
Benjamin W. Sears, MD, Denver, CO

This abstract reviews the functional and clinical outcomes in patients age 60 years and younger who have undergone biologic resurfacing arthroplasty using human acellular dermal allograft.

**Poster No. P0284**
Central Peg Radiolucency Progression of an All Polyethylene Glenoid with Hybrid Fixation in Anatomic Total Shoulder Arthroplasty is Associated with Clinical Failure and Reoperation

Jason Ho, MD, Cleveland, OH
Eric T. Ricchetti, MD, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Glenoid center peg radiolucency progression is associated with revision surgery and clinical outcome score failure.

**Poster No. P0285**
Validation of a Metal Artifact Reduction 3D CT Imaging Method for Quantifying Implant Migration following Anatomic Total Shoulder Arthroplasty

Bong-Jae Jun, PhD, Cleveland, OH
Eric T. Ricchetti, MD, Cleveland, OH
Michael Bey, Detroit, MI
Thomas E. Patterson, PhD, Cleveland, OH
Naveen Subhas, MD, Cleveland
Zong-Ming Li, PhD, Cleveland, OH
Joseph P. Iannotti, MD, PhD, Cleveland, OH

Our MAR 3D CT imaging method can quantify all PE glenoid component migration with a high level of accuracy and may be useful to determine the factors associated with glenoid component loosening.

**Poster No. P0286**
Is the Glenoid Vault Outer Cortex Plane a Better Reference for Glenoid Implant Positioning?

Thomas M. Gregory, Paris, France
Lorenzo Merlini, MD, Paris, France
Ulrich Hansen, London, United Kingdom
Roger Emery, MD, London, United Kingdom

Description of the glenoid vault outer cortex plane. Relevance and use of this plane in determination of pre-eroded glenoid surface orientation in total or reverse shoulder arthroplasty.

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**Poster No. P0287**
The Cost Effectiveness of Preoperative Staphylococcus aureus Screening and Decolonization in Total Shoulder Arthroplasty

Gregory J. Kirchner, BS, Philadelphia, PA
Anisha R. Sunkeneni, BS, San Jose, CA
Yehuda E. Kerbel, MD, Philadelphia, PA
Alexander M. Lieber, BA, Philadelphia, PA
Vincent M. Moretti, MD, Philadelphia, PA
Steven M. Kurtz, PhD, Philadelphia, PA
Shyam Brahmabhatt, MD, Lower Gwynedd, PA

This study utilizes a break-even analysis to demonstrate that prophylactic S. aureus decolonization is a cost effective method for preventing infection following total shoulder arthroplasty.

**Poster No. P0288**
Opioid Dependence Following Total Shoulder Arthroplasty: What Can Orthopaedic Surgeons Do?

Vani J. Sabesan, MD, Weston, FL
Kiran Chatha, MD, Miami, FL
Lucas Goss, Clearwater, FL
Wilfredo J. Boroto, San Juan, Puerto Rico
Claudia Ghisa, Boca Raton, FL
Danielle L. Malone, MPH, Weston, FL
Gregory J. Gilot, MD, Davie, FL

The majority of TSA patients were able to wean off opioids after surgery. However there was a 3.5 times higher risk of postoperative dependence for preoperatively dependent TSA patients.

**Poster No. P0289**
The Effect of Radial Mismatch on Radiographic Glenoid Loosening

Bradley S. Schoch, MD, Gainesville, FL
Thomas W. Wright, MD, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY
Pierre-Henri Flurin, MD, Merignac, France
Christopher Roche, MS, MBA, Gainesville, FL
Joseph J. King, MD, Gainesville, FL

Variation in mismatch between 3.4 and 7.7 mm did not affect the incidence of glenoid lucent lines or the mean Lazarus score, thus contradicting previously published recommendations.

**Poster No. P0290**
Preop and Postop Differences Between Patients Who Reach Minimal Clinically Important Difference or Substantial Clinical Benefit for American Shoulder and Elbow Surgery Score Compared to those Who Do Not after Anatomic Total Shoulder Arthroplasty and Reversal

Ryan W. Simovich, MD, Palm Bch Gdns, FL
Thomas W. Wright, MD, Gainesville, FL
Joseph D. Zuckerman, MD, New York City, NY
Pierre-Henri Flurin, MD, Merignac, France
Ira M. Parsons, MD, Portsmouth, NH
Christopher Roche, MS, MBA, Gainesville, FL

Significant preoperative and postoperative differences in shoulder arthroplasty patients found in patients who achieve MCID and SCB compared to those who do not meet the threshold values for ASES.

**Poster No. P0291**
Negative Patient Experience Comments after Total Shoulder Arthroplasty

Mariano Menendez, MD, Boston, MA
Jonathan Shaker, MS, Boston, MA
Sarah M. Lawler, BA, Waltham, MA
Michael Carducci, BA, Waltham, MA
David C. Ring, MD, Austin, TX
Andrew Jawa, MD, Cambridge, MA

Patient satisfaction may not be a surrogate of effectiveness of care, but efforts to improve the hospital environment are important to providing high-quality care following total shoulder arthroplasty.

**Poster No. P0292**
Clinical Outcomes of Total Shoulder Arthroplasty in Patients 45 Years of Age and Younger

Andrew J. Riff, MD, Indianapolis, IN
Robert Dean, BS, Lisle, IL
Amanda J. Naylor, MA, Chicago, IL
Shelby Sumner, MPH, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL
Brian J. Cole, MD, MBA, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Gregory P. Nicholson, MD, Chicago, IL

TSA performed in individuals under age 45 provided significant improvement in pain, function, range of motion, and quality of life, though results were poorer than those seen in older patients.

**Poster No. P0293**
Chronic Obstructive Pulmonary Disease Patients Undergoing Primary Total Shoulder Arthroplasty and its Impact on Surgical Complications

Ryan Lee, BS, MBA, Washington, DC
Danny Lee, BS, Washington, DC
Ishwarya S. Mamidi, BS, Washington, DC
William V. Probasco, MD, Plainsboro, NJ
Jessica H. Heyer, MD, Washington, DC
Rajeev Pandarinath, MD, Falls Church, VA

Chronic obstructive pulmonary disease in patients undergoing total shoulder arthroplasty independently increases the risk for pneumonia, transfusions, and septic shock postoperatively.

**Poster No. P0294**
Medial Calcar Bone Resorption after Anatomic Total Shoulder Arthroplasty: Does it Affect Outcomes?

Jonathan C. Levy, MD, Fort Lauderdale, FL
Derek Berglund, MD, Fort Lauderdale, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Dimitri S. Tahal, MD, MSc, Miami, FL
Dragomir Mijic, DO, Madison Heights, MI

While calcar resorption following anatomic TSA is quite common (60% of cases), it does not have an effect on post-op functional outcomes or radiographic loosening.

**Poster No. P0295**
Minimum 10-Year Thin Cut CT Follow Up of Total Shoulders with a Partially Cemented All Polyethylene Glenoid

Matthew J. Teusink, MD, Omaha, NE
Noah E. Porter, MD, Omaha, NE
Trevon D. McGill, BS, Omaha, NE
Melissa N. Manzer, MD, BA, Blair, NE
Elizabeth Lyden, MS, Omaha, NE
Edward V. Fehringer, MD, Columbus, NE

At a minimum 10 years post-op, thin cut CT scans revealed radiolucency progression for a partially cemented glenoid component with an uncemented central peg without a decline in shoulder function.
Poster No. P0296
Primary Clavicle Fracture Fixation after Three Months is Associated with an Increased Risk of Major Complications
Jamie A. Nicholson, MBCHB, MRCSED, Edinburgh, United Kingdom
Harriet Gribbin, Grange-over-Sands, United Kingdom
Christopher M. Robinson, MD, Edinburgh, United Kingdom

Clavicle nonunion surgery carries a significantly higher risk of major complications than acute fracture surgery. We present our findings of a large matched case control cohort.

Poster No. P0297
The Comparison of Minimally Invasive Plate Osteosynthesis vs. Open Plate Fixation for the Treatment of Clavicle Midshaft Fracture
Sukwoong Kang, Yangsan, Republic of Korea
Jaeseong Seo, Yansang, Republic of Korea

The surgery results of clavicle shaft fracture were satisfactory for both MIPPO and open plate fixation groups, but MIPPO group had the advantages of shorter surgical duration, minimal incision length, and better pain relief in early stage compared to open.

Poster No. P0298
The Walch B Humerus: Glenoid Retroversion is Associated with Torsional Differences in the Humerus
S. Raniga, London, ON, Canada
Nikolas K. Knowles, London, ON, Canada
Emily West, London, ON, Canada
Louis Ferreira, MSc, London, ON, Canada
George S. Athwal, MD, London, ON, Canada

Our imaging based anthropometric study shows that the humeral retroversion in Walch Type B shoulders is significantly lower than in normal shoulders. (p<0.001)

Poster No. P0299
3D Planning Software for Anatomic Total Shoulder Arthroplasty: Intersurgeon Variability in 360 Cases
Emilie V. Cheung, MD, Redwood City, CA
Alexander T. Greene, Gainesville, FL
Sandrine V. Polakovic, MS, Gières, France
Matthew Hamilton, PhD, Gainesville, FL
Richard B. Jones, MD, Asheville, NC
Ari R. Youderian, MD, Aliso Viejo, CA
Thomas W. Wright, MD, Gainesville, FL
Paul D. Saadi, MD, Dallas, TX
Joseph D. Zuckerman, MD, New York City, NY
Pierre-Henri Flurin, MD, Merignac, France
Ira M. Parsons, MD, Portsmouth, NH
3D Planning Software for Shoulder Arthroplasty

The 3D planning study for ATSA showed that beyond 7 degrees of retroversion, there was increased utilization of posteriorly augmented glenoid components.

Poster No. P0300
Increased Inflammation in the Subscapularis Tendon and Joint Capsule in Patients with Subacromial Impingement: A Biopsy Study
Stefanos Farfaras, Uddevalla, Sweden
Leyla Roshani, Trollhättan, Sweden
Erling Hallstrom, MD, PhD, Uddevalla, Sweden
Jan Mulder, PhD, Solna, Sweden
Nick Mitsios, PhD, Solna, Sweden
Juri Kartus, MD, Trollhattan, Sweden

Increased inflammation in the subscapularis tendon and joint capsule in patients with subacromial impingement: a biopsy study.
PASTA lesions that involved the anterior border of the SSP. Most of the RCTs in shoulders with anterior instability were

The incidence of RCTs was 6% in shoulders with recurrent anterior instability. Most of the RCTs in shoulders with anterior instability were PASTA lesions that involved the anterior border of the SSP.
Poster No. P0315
Displaced 3- and 4-Part Proximal Humeral Fractures: A Prospective Randomized Study Comparing Intramedullary Nail and Locking Plate
Patrick Boyer, MD, PhD, Paris, France
Ruben Dukan, MD, Paris, France
The aim of this study was to compare outcomes and complications of 3- and 4-part proximal humerus fractures treated with either humerus interlocking nail or locking compression plate.

Poster No. P0316
Clinical Outcome of Reverse Shoulder Arthroplasty for a Deficit of Both Active Elevation and External Rotation
Gaku Matsuzawa, MD, Sendai Miyagi, Japan
Toshitake Aizawa, MD, PhD, Iwaki Fukushima, Japan
Reverse shoulder arthroplasty with modified L’Episcopo restore active elevation and external rotation but reduce internal rotation in the case of pseudoparalysis associated with dropping arm.

Poster No. P0317
The Effect of Body Mass Index on Functional Activities of Shoulder Internal Rotation Motion and Self-Reported Function for Anatomic and Reverse Shoulder Arthroplasty: The Results of a Prospectively Collected, Multicenter Study
Josef K. Eichinger, MD, Charleston, SC
Meghana V. Rao, BS, Charleston, SC
Stephen A. Parada, MD, Augusta, GA
Christopher Roche, MS, MBA, Gainesville, FL
Richard J. Friedman, MD, Charleston, SC
A multicenter registry was utilized to study the relationships between BMI, internal rotation (IR) motion, and activities of daily living requiring IR before and after shoulder arthroplasty.

Poster No. P0318
Tobacco Use is Associated with a More Difficult Postoperative Course following Primary Reverse Total Shoulder Arthroplasty
Clay G. Nelson, MD, Memphis, TN
Jacob T. Hartline, BS, Memphis, TN
Ryan B. Eads, MD, Memphis, TN
Tyler J. Brolin, MD, Collierville, TN
Frederick M. Azar, MD, Memphis, TN
A current registry was utilized to study the relationships between current tobacco use and complications following primary reverse total shoulder arthroplasty.

Poster No. P0319
Prediction of Impingement-Free Range of Motion Prior to Reverse Shoulder Arthroplasty
Diego Lima, MD, Weston, FL
Jordan Grauer, BA, Boca Raton, FL
Bhavya Sheth, South Daytona, FL
Gregory J. Gilot, MD, Davie, FL
Vani J. Sabesan, MD, Weston, FL
Preoperative planning for reverse shoulder arthroplasty (RSA) using 3D automated software for impingement-free range of motion is still limited to provide reproducible clinical information.

Poster No. P0320
Comparative Clinical Outcomes of Reverse Total Shoulder Arthroplasty: A Matched-Cohort Analysis of Primary Cuff Tear Arthropathy versus Severe Glenohumeral Osteoarthritis with Intact Rotator Cuff
Brian R. Waterman, MD, Winston-Salem, NC
Robert Dean, BS, Lisle, IL
Shelby Sumner, MPH, Chicago, IL
Amanda J. Taylor, MA, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Gregory N. Nicholson, MD, Chicago, IL
Patients with severe GH OA and an intact rotator cuff demonstrate similar improvement in patient-reported outcomes and range of motion values as rotator cuff deficient patients after RTSA.

Poster No. P0321
The Role of Acromial Morphometry In the Development of Acromial Stress Fracture Following Reverse Total Shoulder Arthroplasty
Shawn T. Yeazel, MD, Bethlehem, PA
Timothy Visser, MBA, Fountain Hill, PA
Gregory F. Carolan, MD, Bethlehem, PA
Preoperative acromial thickness in the lateral and posterior third is an independent risk factor for development of an acromial stress fracture following rRTSA.

Poster No. P0322
Bony Increased-Offset Reverse Shoulder Arthroplasty: Five to 10 Years Follow Up
Pascal Boileau, MD, Nice, France
Nicolas Morin-Salvo, Nice, France
Marc-Olivier Gauci, Nice, France
Gregory Moineau, Brest, France
Mikaël Chelli, MD, Nice, France
At mid- to long-term follow up, the autogenous graft used in the BIO-RSA heals consistently and predictably with the native glenoid, and good functional outcomes have been observed.

Poster No. P0323
An In Vitro Study Modeling Scapular Notching: Wear Testing of the Polyethylene on Bone Articulation
Daniel Austin, MD, White River Junction, VT
John-Erik Bell, MD, Hanover, NH
Tess Bracken, Hanover, NH
Douglas Van Citters, PhD, Hanover, NH
The articulation of polyethylene on cortical bone, as occurs with scapular notching, is associated with low wear rates, while polyethylene on trabecular bone is marked by catastrophic wear rates.

Poster No. P0324
Does Early Mobilization Affect the Range of Motion and Clinical Outcomes after a Reverse Shoulder Arthroplasty?
Vani J. Sabesan, MD, Weston, FL
Ahmed Almansooni, MBBS, Pembroke Pines, FL
Arun Meiyappan, MD, Weston, FL
Gregory J. Gilot, MD, Davie, FL
Early rehabilitation protocol following reverse shoulder arthroplasty did not affect patient report outcomes or satisfaction but it did increase early mobility and function postoperatively.

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Poster No. P0325
The Effect of Neck/Shaft Angle in Subcapularis Repair after Reverse Shoulder Arthroplasty
Andreas Kontaxis, PhD, New York, NY
Xiang Chen, MS, New York, NY
David M. Dines, MD, Uniondale, NY
Russell F. Warren, MD, New York, NY
Lawrence V. Gulotta, MD, New York, NY

The neck/shaft angle can affect the biomechanics of subcapularis muscle in RSA by changing its moment arm and muscle length. The 135° design produced better results but muscle tensioning is a concern.

Poster No. P0326
Scapular Notching as a Function of Glenoid Component Position: A Detailed Radiographic Analysis at Mid-Term Follow Up
Nicholas C. Duethman, MD, Rochester, MN
William R. Abibinder, MD, Rochester, MN
John W. Sperling, MD, MBA, Rochester, MN
Robert H. Cofield, MD, Saint Simons Island, GA
Joaquin Sanchez-Sotelo, MD, Rochester, MN

We performed a radiographic evaluation of patients who underwent primary reverse total shoulder arthroplasty to evaluate a new radiographic parameter that correlates with scapular notching.

Poster No. P0327
Accuracy of Reverse Total Shoulder Arthroplasty Baseplate Implantation Using a Computer Assisted Surgery Navigation System versus a Nonnavigated Technique in Cadaveric Shoulders
Richard B. Jones, MD, Asheville, NC
Ari R. Youderian, MD, Aliso Viejo, CA
Alexander T. Greene, Gainesville, FL
Matthew Hamilton, PhD, Gainesville, FL
Sandrine V. Polakovic, MS, Gières, France
Nicole Mohajer, BSME, Gainesville, FL
Ira M. Parsons, MD, Portsmouth, NH
Paul D. Saadi, MD, Dallas, TX
Emilie V. Cheung, MD, Redwood City, CA

Comparison of computer assisted vs. conventional surgery was performed in 15 matched shoulders. CAS navigation had less deviation: version 1.9±1.9° vs. 5.9±3.5°; inclination 2.4±2.5° vs. 6.3±6.2°.

Poster No. P0328
The Scapular Geometry of Acute, Traumatic Rotator Cuff Tears Differs from that of Degenerative Tears: A Multicenter Analysis of the Critical Shoulder Angle
Michael H. Amini, MD, Tucson, AZ
Geoffrey P. Stone, MD, Houma, LA
Troy A. Roberson, MD, Indianapolis, IN
Tyler J. Brolin, MD, Collierville, TN
Joshua B. Sykes, MD, Bridgeport, WV

Acute, traumatic RCTs have CSAs that are much smaller than degenerative RCTs, and the majority, 60%, have CSAs that do not fall in the range consistent with degenerative RCTs.

Poster No. P0329
Advanced Goutallier Stages of Rotator Cuff Pathology are Associated with Muscle-Derived Stem Cell Depletion
Nilay Patel, MD, Orange, CA
James Jung, MD, Irvine, CA
David Wright, MD, Orange, CA
Jennifer Uong, Irvine, CA
Justin Chan, BA, Newport Beach, CA
Brian Cumings, PhD, Irvine, CA
Thay Q. Lee, PhD, Long Beach, CA
Ranjit Gupta, MD, Orange, CA

Our early data shows that advanced fatty infiltration is associated with muscle-derived stem/progenitor cells depletion in human rotator cuff muscles.

Poster No. P0330
Retinoic Acid Receptor Agonists Suppress Muscle Fatty Infiltration after Rotator Cuff Tear in Mice
Hideyuki Shirasawa, MD, Tokyo, Japan
Keisuke Horiuchi, MD, PhD, Saitama, Japan
Noboru Matsumura, MD, Tokyo, Japan
Satoshi Oki, Tokyo, Japan
Mio Matsumoto, MD, Tokyo, Japan
Masaya Nakamura, MD, Tokyo, Japan

Developing a therapeutic intervention to prevent fatty infiltration after rotator cuff tear is critical. We suggest that the fatty infiltration can be alleviated by retinoic acid receptor agonists.

Poster No. P0331
Allogenic Dermal Matrix Augmentation after Arthroscopic Rotator Cuff Repair for Large to Massive Rotator Cuff Tear: Does it Really Work?
Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea
Dohoon Kim, Seoul, Republic of Korea

Compared to conventional repair technique, augmentation of allogenic dermal matrix showed good clinical outcomes and significantly reduced healing failure rate in large to massive rotator cuff tear.

Poster No. P0332
Optimum Tension of Bridging Suture in Transosseous Equivalent Rotator Cuff Repair: A Clinical Prospective Randomized Comparative Study
Joo-Hyun Park, Seongnam, Republic of Korea
Jisoon Park, MD, Ras Al Khaimah, United Arab Emirates
Sung-Min Rhee, MD, Seongnam, Republic of Korea
Hyung Suk Kim, Seongnam, Republic of Korea
Tae-Yon Rhie, MD, PhD, Seoul, Republic of Korea

Considering the results of biomechanical and clinical study, maximum bridging suture tension is desirable to enhance rotator cuff healing in the TOE repair.

Poster No. P0333
Early Clinical Outcomes of Superior Capsular Reconstruction Compared to Tendon Transfers
Eric R. Wagner, MD, Atlanta, GA
Jarret M. Woodmass, MD, Calgary, AB, Canada
Kathryn M. Welp, Cambridge, MA
Michelle J. Chang, BS, Boston, MA
Laurence D. Higgins, MD, Brookline, MA
Jon J. Warner, MD, Boston, MA

The arthroscopic assisted tendon transfers had improved pain levels and equivalent early functional recovery outcomes to superior capsular reconstruction for massive rotator cuff tears.
Latissimus Dorsi Transfer for Irreparable Subscapularis Tear

Bassem T. Elhassan, MD, Rochester, MN

Eric R. Wagner, MD, Atlanta, GA

Jean Kany, Toulouse, France

Latissimus dorsi transfer for irreparable subscapularis tears has the potential to lead to clinical improvements in patients shoulder function, including pain, motion, and function.

Establishing Clinically Significant Outcome after Arthroscopic Rotator Cuff Repair

Gregory L. Cvetanovich, MD, Columbus, OH

Ani Gowd, BS, Cary, NC

Joseph Liu, MD, Chicago, IL

Benedict U. Nwachukwu, MD, MBA, New York, NY

Brandon C. Cabezac, BS, Hialeah, FL

Brian J. Cole, MD, MBA, Chicago, IL

Brian Forsythe, MD, Chicago, IL

Anthony A. Romeo, MD, Chicago, IL

Nikhil N. Verma, MD, Chicago, IL

Factors associated with failing to achieve clinically significant values after arthroscopic rotator cuff repair were current smokers, single row repairs, high BMI, and workers’ compensation status.

Patient Perceptions of Iliac Crest Bone Grafting in Minimally Invasive Transforaminal Lumbar Interbody Fusion

Kern Singh, MD, Chicago, IL

Brittany Haws, MD, Chicago, IL

Benjamin Khechen, BA, Chicago, IL

Dil V. Patel, BS, Chicago, IL

Kaitlyn L. Cardinal, BS, Chicago, IL

Jordan Guntin, Chicago, IL

Kaitlyn L. Cardinal, BS, Chicago, IL

Sailee S. Karmarkar, BS, Chicago, IL

This study aims to determine patient’s perception of iliac crest bone graft harvesting and subsequent donor site pain following minimally invasive transforaminal lumbar interbody fusion.

Do Culture Positive Cervical Discs Correlate with Radiographic Changes?

Charles Gordon, MD, Baltimore, MD

Robert Morales, MD, Baltimore, MD

Alysa Nash, BS, Baltimore, MD

Jonathan B. Hurst, Salisbury, MD

Durga Sivacharan Gaddam, MD, Clarksburg, MD

Farooq Usman, BSc, MS, Huntingdon, NY

Eugene Y. Koh, MD, PhD, Baltimore, MD

Kelley E. Banagan, MD, Baltimore, MD

Daniel E. Gelb, MD, Baltimore, MD

Steven C. Ludwig, MD, Baltimore, MD

University of Maryland Orthopaedic Spine

Among patients undergoing ACDF, culture positive cervical discs correlate with preoperative radiographic changes.

Perioperative Complications of Spine Surgery in Patients Aged 80 Years or Older: Multicenter Prospective Survey

Takamasa Watanabe, MD, Hokkaido, Japan

Masahiro Kanayama, MD, Hakodate, Japan

Masahiko Takahata, MD, Sapporo, Japan

Itaru Oda, MD, PhD, Sapporo, Japan

Kota Suda, MD, Bibai, Japan

Yuichiro Abe, MD, PhD, Eniwa, Japan

Yosihiro Hojo, MD, PhD, Kushiro, Japan

Norimasa Iwasaki, Sapporo, Japan

Sapporo City General Hospital

Multicenter prospective survey of perioperative complications of spine surgery in patients aged 80 years or older showed malnutrition and operative time significantly correlated to the complications.

Obesity is Associated with Worse Perioperative Outcomes and Increased Costs in Lumbar Fusion Surgery: Analysis of 1,196 Cases at a Single Institution

Amit Jain, MD, Baltimore, MD

Sandra Hobson, MD, Decatur, GA

E Yoon, Atlanta, GA

Scott D. Boden, MD, Atlanta, GA

John G. Heller, MD, Atlanta, GA

John J. Rhee, MD, Atlanta, GA

S. T. Yoon, MD, PhD, Atlanta, GA

We investigate the association of obesity with perioperative metrics in patients undergoing spinal fusion surgery for degenerative lumbar pathology.

The Impact of Health Literacy on Health Status and Resource Utilization in Lumbar Degenerative Disease

Steven D. Glassman, MD, Louisville, KY

Leah Y. Carreon, MD, Louisville, KY

John G. Heller, MD, Atlanta, GA

John J. Rhee, MD, Atlanta, GA

S. T. Yoon, MD, PhD, Atlanta, GA

Mark V. Williams, MD, Lexington, KY

Patients with lower health literacy reported poorer outcomes, indicating either more severe disease or a fundamental difference in their responses to standard health-related quality of life measures.

Comparison of Neutrophil and Lymphocyte at One and Four Days Postoperatively: Reliable and Early Detection Markers for Surgical Site Infection following Instrumented Spinal Fusion

Yusuke Yamamoto, Kashihara City, Japan

Eiichiro Iwata, MD, Nara, Japan

Hideki Shigematsu, MD, PhD, Kashihara, Japan

Masato Tanaka, Kashihara, Japan

Sachiko Kawasaki, MD, Kashihara, Japan

Keisuke Masuda, MD, Nara, Japan

Yasuhiro Tanaka, MD, Kashihara, Japan

Neutrophil percentage and count at postoperative day 4 more than day 1 and lymphocyte percentage and count at postoperative day 4 less than day 1 were reliable biochemical markers for SSI.
**Poster No. P0342**  
Spine Surgery Patient Response Rates to the Hospital Consumer Assessment of Healthcare Providers and Systems Surveys are Significantly Affected by Patient Factors and Perioperative Outcomes: A Single Institution Study of Non-Response Bias  
Rohil Malpani, BS, New Haven, CT  
Murillo Adrados, MD, New Haven, CT  
**Michael R. Mercier, BA, West Springfield, MA**  
Ryan McLynn, BS, Birmingham, AL  
Jonathan N. Grauer, MD, New Haven, CT  

Single institution study of 5,517 spine patients to assess nonresponse bias related to the HCAHPS patient satisfaction survey.

**Poster No. P0343**  
Tobacco Use and Complications Following Spinal Fusion: A Comparison of the National Surgical Quality Improvement Program and Nationwide Inpatient Sample Datasets  
Wesley M. Durand, BS, Providence, RI  
John M. Depasse, MD, Providence, RI  
Steven L. Bokshan, MD, Providence, RI  
Adam E. Eitarai, Providence, RI  
Alan H. Daniels, MD, Providence, RI  

The NIS and NSQIP results were overall similar. A qualitative comparison of NIS and NSQIP yields results that likely offer increased validity over single data-source studies.

**Poster No. P0344**  
Immediate Postoperative Narcotic Use is Not Associated with Preoperative Opiate Use or Surgery Invasiveness  
Portia A. Steele, Louisville, KY  
Jeffrey Gum, MD, Louisville, KY  
Charles H. Crawford, MD, Prospect, KY  
Roger K. Owens, MD, Prospect, KY  
Mladen Djurasovic, MD, Louisville, KY  
Morgan E. Brown, MS, Louisville, KY  
Steven D. Glassman, MD, Louisville, KY  
Leah Y. Carreon, MD, Louisville, KY  

Neither surgery invasiveness nor preop opiate impact immediate postop opiate consumption. Patients on preop narcotics have worse baseline and 1-year ODI following 1- and 2-level MIDLIFs or TLIFs.

**Poster No. P0345**  
Rib Abnormalities in Congenital Scoliosis Develop from a Focal Abnormal Tissue Region: The Paravertebral Longitudinal Cartilage Accumulation  
Frederic Shapiro, MD, San Francisco, CA  
Joy Wu, MD, PhD, Stanford, CA  

Pudgy mouse mutant with congenital scoliosis and rib abnormalities shows rib malformations invariably developing from a focal abnormal tissue region, the paravertebral longitudinal cartilage accumulation (PVLCA).

**Poster No. P0346**  
Risk Factors of Instrument Failure and Sacral Fracture after Stand Alone L5-S1 Anterior Lumbar Interbody Fusion: A Retrospective Cohort Study  
Charles-Henri Flouzat Lachaniette, MD, Créteil, France  
Antoinee Jaeger, Créteil, France  
Arnaud Dubory, Créteil, France  

A retrospective cohort study identifying risk factors of instrumentation failure, sacral fracture and pseudarthrosis after stand-alone L5-S1 ALIF.

**Poster No. P0347**  
Thoracic Cobb, But Not Kyphosis Correction, has a Strong Correlation with Lumbar Cobb Correction in Selective and Non-Selective Thoracic Fusion Lenke 3, 4, and 6 Patients  
**Vishal Sarwahi, MD, Lake Success, NY**  
Stephen Wendolowski, BS, Hasbrouck Heights, NJ  
Jesse M. Galina, BS, New Hyde Park, NY  
Yungtai Lo, PhD, Bronx, NY  
Terry D. Amaral, MD, Lake Success, NY  

Thoracic Cobb correction ‘strongly’ correlates with lumbar Cobb correction in Lenke 3, 4, and 6 patients undergoing selective thoracic fusion or non-selective thoracic fusion.

**Poster No. P0348**  
Restoration of Thoracic Kyphosis in Adolescent Idiopathic Scoliosis over a Twenty-Year Period: Are We Getting Better?  
**Blake Bodendorfer, MD, Washington, DC**  
Suken A. Shah, MD, Wilmington, DE  
Tracey Bastrom, MA, San Diego, CA  
Baron Lonner, MD, New York, NY  
Burt Yasay, MD, San Diego, CA  
Amer Samdani, MD, Philadelphia, PA  
Firoz Miyanji, MD, Vancouver, BC, Canada  
Patrick J. Cahill, MD, Philadelphia, PA  
Paul D. Sponseller, MD, Baltimore, MD  
Randal R. Betz, MD, Lawrenceville, NJ  
David H. Clements, MD, Camden, NJ  
Lawrence G. Lenke, MD, New York, NY  
Harry L. Shuffalberger, MD, Miami, FL  
Peter O. Newton, MD, San Diego, CA  
Harms Study Group  

The shift from anterior to posterior approaches in AIS was initially associated with worse thoracic kyphosis restoration, but it improved with time likely related to adoption of advanced techniques.

**Poster No. P0349**  
Stomaching the Pain of Spinal Fusion: Gastrointestinal Discomfort is as Severe as Back Pain in 50% of Adolescent Idiopathic Scoliosis Patients Following Posterior Spinal Fusion  
Gabriela A. Villamar, BA, Los Angeles, CA  
**Lindsay M. Andras, MD, Los Angeles, CA**  
Priscella Chan, Los Angeles, CA  
Austin Sanders, BA, New York, NY  
Hulaimatu Jalloh, BA, Los Angeles, CA  
Paul D. Choi, MD, Pasadena, CA  
Vernon T. Tolo, MD, Los Angeles, CA  
David L. Skaggs, MD, Los Angeles, CA  

Abdominal pain (51%), emesis (63%), nausea (66%), and constipation (68%) were experienced by the majority of AIS patients following PSF. Pain ratings of GI discomfort were as severe as back pain.

**Poster No. P0350**  
Spinal Rod Gripping Capacity: How Do 5.5/6.0 mm Dual Diameter Screws Compare?  
Peter O. Newton, MD, San Diego, CA  
Megan Jeffords, MS, San Diego, CA  
Christine L. Farnsworth, MS, San Diego, CA  
Dylan Kluck, MD, San Diego, CA  
**Nikolas E. Marino, BA, San Diego, CA**  
Vidyadhar V. Upasani, MD, San Diego, CA  
Burt Yasay, MD, San Diego, CA  

Pedicle screws that accept 5.5 or 6.0mm rods have axial and torsional rod gripping capacity equal to, or better than, screws that only accept 5.5mm rods, and have no Ti or CoCr rod grip loss.
Poster No. P0351
Lenke 1 Adolescent Idiopathic Scoliosis: Effects of Thoracic Kyphosis Restoration on Regional and Global Alignment
Jonathan C. Elysee, New York, NY
Renaud Lafage, New, NY, New York, NY
Brice Henry, MD, Marseille, France
Colleen Wixted, BS, Brooklyn, NY
Manon Bolzinger, Toulouse, France
Han Jo Kim, MD, New York City, NY
Matthew E. Cunningham, MD, PhD, New York, NY
Elie Choufani, Marseille, France
Virginie Lafage, PhD, New York, NY
John S. Blanco, MD, New York City, NY
Roger F. Widmann, MD, New York, NY
Jean Luc Jouve, Marseille, France
Sébastien Pesenti, MD, New, NY, NY
HSS Spine

After AIS surgery significant correlations found between the change in TK and other parameters helped develop predictive formulas using the change in TK as a predictor.

Poster No. P0352
Lumbar Spinal Stenosis in Patients with Diffuse Idiopathic Skeletal Hyperostosis: Surgical Outcome of Posterior Decompression Surgery without Instrumentation
Eijiro Okada, MD, PhD, Tokyo, Japan
Mitsuru Yagi, MD, PhD, Tokyo, Japan
Nobuyuki Fujita, Tokyo, Japan
Satoshi Suzuki, MD, PhD, Ichikawa, Japan
Osahiko Tsuji, MD, PhD, Tokyo, Japan
Naohito Nagoshi, Toronto, ON, Canada
Masaya Nakamura, MD, Tokyo, Japan
Morio Matsumoto, MD, Tokyo, Japan
Kota Watanabe, MD, PhD, Tokyo, Japan

Higher revision rate may be impacted by development of anterior translation in decompressed segment after decompression surgery in the patients with diffuse idiopathic skeletal hyperostosis.

Poster No. P0353
Immediate Restoration of Lordosis in Single-Level Minimally Invasive Transforaminal Lumbar Interbody Fusion: A Comparison of Expandable and Static Interbody Cages
Philip A. Saville, MD, New York, NY
Avani Vaishnav, MBBS, New York, NY
Steven McAnany, MD, Saint Louis, MO
Sertac Kirnaz, MD, New York, NY
Rodrigo Navarro-Ramirez, MD, MS, New York City, NY
Roger Hartl, MD, New York, NY
Catherine Himo Gang, MPH, New, NY, NY
Sheeraz Qureshi, MD, New York, NY

This study compares the radiographic outcomes of static and expandable interbody cages in MI-TLIF, and evaluates the impact of cage-positing on radiographic parameters.

Poster No. P0354
Does L4/5 Pose Additional Neurologic Risk in Lateral Lumbar Interbody Fusion?
Stephan N. Salzmann, MD, New York, NY
Toshiyuki Shirahata, MD, PhD, Tokyo, Japan
Oliver Sax, BA, New York, NY
Jingyan Yang, MS, New York, NY
Jennifer Shue, MS, New York, NY
Andrew A. Sama, MD, New York, NY
Frank P. Cammisa, MD, New York, NY
Federico P. Girardi, MD, New York, NY
Alexander P. Hughes, MD, New York, NY

Although there is an initial increased risk of new motor deficits of the quadriceps and tibialis anterior muscle for LLIF performed at L4/5, the majority of new motor deficits resolved over time.

Poster No. P0355
Improvements in Back and Leg Pain Following a Minimally Invasive Lumbar Decompression
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Brittany Haws, MD, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Dustin H. Massel, MD, Miami, FL
Benjamin C. Mayo, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Jordan Guntin, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL

This study evaluates the improvement in back pain, leg pain, Oswestry Disability Index, and Short Form-12 Mental and Physical Health Composite scores following minimal invasive lumbar decompression.

Poster No. P0356
Development and Validation of a Risk Severity Score for Surgical Site Infection after Spinal Surgery: Identifying High-Risk Patients with Cerebral Palsy
Michael G. Vitale, MD, MPH, Irvington, NY
Hiroko Matsumoto, MA, New York, NY
Megan Campbell, BA, Hampton, NJ
Benjamin D. Roye, MD, New York, NY
Paul D. Sponseller, MD, Baltimore, MD
Jack M. Flynn, MD, Philadelphia, PA
David L. Skaggs, MD, Los Angeles, CA
Michael P. Glotzbecker, MD, Boston, MA
Lawrence G. Lenke, MD, New York, NY

A novel RSS provides a means for predicting SSI within 90 days of spinal surgery in high risk patients with CP using patient characteristics and has been validated among a large international cohort.

Poster No. P0357
Activity of Daily Living, Pulmonary Function, and Survival Rate in Duchenne Muscular Dystrophy Scoliosis (Comparison of Outcome Differences between Surgical and Non-surgical Treatment in Controlled Cohort Group)
Hak-Sun Kim, MD, PhD, Seoul, Republic of Korea
Dong-Eun Shin, MD, PhD, Seoungnam, Republic of Korea

In total, 187 patients (93 surgically and 94 nonsurgically) were evaluated about VC, radiology, function, and mortality (mean 5.57± 3.1 year). The death was 22 patients (23.4%, 22/94) in conservative group and 8 patients (8.6%, 8/93) in surgery group. The
Poster No. P0358
Safety of Tranexamic Acid Use in Adult Spinal Fusion Surgery Patients
Sariah Khormaei, MD, PhD, New York, NY
Abhinaba Chatterjee, New York, NY
Peter S. Chang, MD, Saint Louis, MO
Hooman Kamel, New York, NY
Tranexamic acid was associated with a low, but increased incidence of new onset seizures and pulmonary embolism in a large retrospective cohort of adult spinal fusion patients.

Poster No. P0359
Complications following Thoracolumbar Spinal Surgery for Adult Spinal Deformity in the Setting of Rheumatoid Arthritis with Minimum 2-Year Surveillance
George A. Beyer, BA, MS, Brooklyn, NY
Neil V. Shah, MD, MS, New York, NY
Joseph P. Scollan, Brooklyn, NY
Douglas Hollern, MD, Brooklyn, NY
Lee Bloom, MD, Brooklyn, NY
Peter G. Passias, MD, Westbury, NY
Carl B. Paulino, MD, Brooklyn, NY
Virginie Lafage, PhD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
This study demonstrates a clear association between RA and increased risks of both total complications and subsequent revision surgery.

Poster No. P0360
Thirty-Day Readmission Risk Following Cervical Spine Surgery: Derivation and Validation of a Predictive Model
Piyush Kalakoti, MBBS, MD, Iowa City, IA
Alexander J. Volkmar, BS, Coralville, IA
Alan G. Shamrock, MD, Iowa City, IA
Yubo Gao, PhD, Iowa City, IA
Cosma Calderaro, MD, Rome, Italy
Nathan Hendrickson, MD, Iowa City, IA
Andrew J. Pugely, MD, Iowa City, IA
The study quantifies risk estimates associated with the risk of 30-day readmission in patients undergoing cervical surgery and proposes a validated web-based app for individualized risk-prediction.

Poster No. P0361
In-Patient Outcomes Following Elective Lumbar Spinal Fusion for Patients with Human Immunodeficiency Virus in the Absence of Acquired Immunodeficiency Syndrome
Alexander Butler, Miami, FL
Chester J. Donnally, MD, Miami, FL
Piyush Kalakoti, MBBS, MD, Iowa City, IA
Andrew Buskard, MS, Coral Gables, FL
Karthik Madhavan, MD, Miami, FL
Anil Nanda, Shreveport, LA
Andrew J. Pugely, MD, Iowa City, IA
Joseph P. Gjolaj, MD, Miami Beach, FL
Well-controlled HIV-positive patients undergoing lumbar spinal fusion, despite the absence of AIDS, had higher rates of inpatient adverse events and mortality relative to HIV-negative patients.

Poster No. P0362
Are Health Related Quality of Life (HRQOL) Outcomes of Anterior Cervical Discectomy and Fusion influenced by Smoking Status?
Taolin Fang, MD, PhD, Philadelphia, PA
Wesley Bronson, MD, New York, NY
Matthew Galetta, BA, Philadelphia, PA
Kristen Nicholson, PhD, Philadelphia, PA
Daniel Tarazona, Philadelphia, PA
Alan S. Hiliard, MBA, MD, Philadelphia, PA
Christopher Kepler, MD, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Gregory D. Schroeder, MD, Philadelphia, PA
Our finding shows that stopping smoking may not only improve fusion rates, but also clinical outcomes in ACDF surgeries.

Poster No. P0363
Patient-Reported Outcomes Measurement Information System (PROMIS) in Spine Surgery: A Systematic Review
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Adam Wiggins, Carlock, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Sailee S. Karmarkar, BS, Chicago, IL
A systematic review of Patient-Reported Outcomes Measurement Information System utilization in the spine literature was done to describe trends and assess correlations with legacy outcome measures.

Poster No. P0364
Establishing Maximal Medical Improvement Following Anterior Cervical Discectomy and Fusion
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Anirudh K. Gowd, Cary, NC
Jordan Guntin, Chicago, IL
Sailee S. Karmarkar, BS, Chicago, IL
Joseph Liu, MD, Chicago, IL
This study aims to identify the time point at which patients undergoing primary, single-level anterior cervical discectomy and fusion can be considered to have reached maximal medical improvement.

Poster No. P0365
The Effect of Preoperative Medications on Length of Stay, Inpatient Pain, and Narcotics Consumption Following Minimally Invasive Transforaminal Lumbar Interbody Fusion
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Andrew M. Block, BS, Smyrna, GA
This study evaluates the association between preoperative medications and length of stay, inpatient pain, and narcotics consumption after minimally invasive transforaminal lumbar interbody fusion.
Poster No. P0366
An Epidural Steroid Injection in the Six Months Preceding a Lumbar Decompression without Fusion Predisposes Patients to Postoperative Infection
Dustin H. Massel, MD, Miami, FL
Chester J. Donnally, MD, Miami, FL
Augustus Rush, MD, Miami, FL
Sebastian Rivera, MD, Miami, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Frank J. Eismont, MD, Miami, FL
An epidural steroid injection in the 6 months preceding a lumbar decompression without fusion predisposes patients to postoperative infections.

Poster No. P0367
Inpatient Pain Scores and Narcotic Utilization based on American Society of Anesthesiologists Score after Cervical and Lumbar Spinal Fusion
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Ankur S. Narain, BA, Baltimore, MD
Fady Y. Hijji, MD, Dayton, OH
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Andrew M. Block, BS, Smyrna, GA
This study examines the association between American Society of Anesthesiologists (ASA) Score, pain scores, and narcotic utilization following cervical or lumbar spinal fusion.

Poster No. P0368
Preoperative Patient Activation is Not Associated with Inpatient Pain or Narcotics Utilization after Minimally Invasive Lumbar Discectomy
Kern Singh, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Brittany Haws, MD, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Ankur S. Narain, BA, Baltimore, MD
Fady Y. Hijji, MD, Dayton, OH
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Andrew M. Block, BS, Smyrna, GA
This study evaluates if an association exists between preoperative Patient Activation Measure score and inpatient postoperative pain scores and narcotics utilization.

Poster No. P0369
Orthopaedic Surgeries Decrease Chronic Opioid Use: The Relationship Between Preoperative and Postoperative Opioid Use Patterns
John L. Brock, BA, Philadelphia, PA
Nikhil Jain, MBBS, MD, Columbus, OH
Frank M. Phillips, MD, Chicago, IL
Safdar N. Khan, MD, Columbus, OH
We analyzed seven common elective procedures and found that orthopaedic surgery often leads to discontinuation of chronic opioid use. Stopping opioids before surgery appears to be beneficial.

Poster No. P0370
PROMIS Pain Interference is Superior to the Likert Pain Scale for Pain Assessment in Spine Patients
David Bernstein, MA, MBA, Rochester, NY
Matthew J. St John, MD, Rochester, NY
Addisu Mesfin, MD, Rochester, NY
Self-reported physical function is more significantly correlated to PROMIS PI than the Likert 0-10 pain scores. This suggests PROMIS PI may better capture the impact of pain on spine patient health.

Poster No. P0371
All Disclosure is Good Disclosure: Patient Awareness of the Sunshine Act and Perceptions of Surgeon-Industry Relationships
Kern Singh, MD, Chicago, IL
Srvathi Yeru, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Brittany Haws, MD, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Sailee S. Karmarkar, BS, Chicago, IL
Frank M. Phillips, MD, Chicago, IL
This study aims to determine patient awareness of the open-payments database and patient awareness of their surgeon’s industry relationships.

Poster No. P0372
The Effect of Nicotine Dependence and Smoking on Revision Discectomy after Single-Level Lumbar Discectomy
Eric Smith, Cleveland, OH
Bradley Inkrott, MD, Akron, OH
Nicholas U. Ahn, MD, Shaker Heights, OH
Smoking was found to significantly increase the rate of revision discectomy after single-level lumbar discectomy.

Poster No. P0373
Excising the Guesswork: Fluorescence-Guided Infection Debridement Surgery within a Mouse Model of Spine Infection
William L. Sheppard, MD, MPH, Los Angeles, CA
Howard Park, MD, Los Angeles, CA
Stephen D. Zoller, MD, Los Angeles, CA
Vishal Hegde, MD, Santa Monica, CA
Zachary Burke, MD, Venice, CA
Gideon W. Blumstein, MD, Los Angeles, CA
Christopher D. Hamad, BS, Los Angeles, CA
Nicholas M. Bernthal, MD, Santa Monica, CA
Novel probes identify spine infection with OR-ready fluorescent cameras to aid debridement.

Poster No. P0374
Preoperative Opioid Use is Associated with Prolonged Postoperative Opioid Consumption, More Complications, and Persistent Pain After Elective Spine Surgery
Jose H. Jimenez-Almonte, MD, Lexington, KY
Jonathan D. Grabau, BS, Lexington, KY
Ifeanyi Nzewu, MD, Lexington, KY
Zeeshan Akhtar, BA, New Hartford, NY
Syed K. Mehdi, MD, Lexington, KY
Boshen Liu, MD, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Carter Cassidy, MD, Lexington, KY
A preoperative history of opioid use before elective spine surgery was associated with significantly higher rates of perioperative complications and postoperative healthcare utilization.

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Poster No. P0375
Implant Sonication versus Tissue Culture for the Detection of Spinal Implant Infection
Bayard C. Carlson, MD, Rochester, MN
Jeremy T. Hines, MD, Rochester, MN
William A. Robinson, MD, Rochester, MN
Arjun Sebastian, MD, Rochester, MN
Robin Patel, MD, Rochester, MN
Paul M. Huddleston, MD, Rochester, MN
When compared to peri-implant tissue culture, implant sonication followed by culture is a sensitive and specific method for the diagnosis of spinal implant infection.

Poster No. P0376
Development of a Spine Surgical Skills Assessment for Orthopaedic Surgery Residents
Robert C. Ryu, MD, Columbus, OH
Andrew Campbell, MD, Columbus, OH
Nikhil Jain, MBBS, MD, Columbus, OH
Kari Stammen, ATC, Columbus, OH
Elizabeth M. Yu, MD, Columbus, OH
The purpose of this study is to develop an assessment module for orthopaedic spine surgery residents that is cost-effective and can reliably test knowledge and surgical skills.

Poster No. P0377
How Much Time is Spent by Mid-Level Providers for Insurance Precertification for Diagnostic Imaging?
Kristen E. Radcliff, MD, Egg Harbor Township, NJ
Alan S. Hilibrand, MBA, MD, Philadelphia, PA
Alexander Vaccaro, MD, PhD, Gladwyne, PA
Gregory D. Schroeder, MD, Philadelphia, PA
Ian Kaye, MD, New York, NY
Christopher Kepler, MD, Philadelphia, PA
Barrett I. Woods, MD, Egg Harbor Township, NJ
Clinical staff spent 581 minutes performing preauthorizations in a single month for diagnostic imaging. All preauthorization requests were granted. Preauthorization wastes time that could benefit patients.

Poster No. P0378
Quantitative Age-Adjusted Targets for Ideal Cervicothoracic Sagittal Alignment in Asymptomatic Adults
Peter G. Passias, MD, Westbury, NY
Cole Bortz, BA, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Samantha Horn, BA, New York, NY
Michael J. Moses, MD, New York, NY
Carl B. Paulino, MD, Brooklyn, NY
Bassel Diebo, MD, Brooklyn, NY
Thomas J. Errico, MD, New York, NY
Relationships exist between age, neck disability, and cervicothoracic alignment, suggesting that measurements across the cervicothoracic junction may be clinically relevant in predicting patient outcomes.

Poster No. P0379
The Impact of Obesity on Regional Bone Mineral Density Measured by Quantitative Computed Tomography in the Lumbosacral Spine
Ichiro Okano, MD, New York, NY
Stephan N. Salzmann, MD, New York, NY
Toshiyuki Shirahata, MD, PhD, Tokyo, Japan
Courtney Ortiz Miller, BA, New York, NY
John A. Carrino, MD, New York, NY
Andrew A. Sama, MD, New York, NY
Frank P. Cammisa, MD, New York, NY
Federico P. Girardi, MD, New York, NY
Alexander P. Hughes, MD, New York, NY
No significant correlation was observed between BMI and QCT-BMDs in the lumbar spine, whereas QCT-BMDs in the sacral regions showed small but statistically significant positive correlations with BMI.

Poster No. P0380
Preoperative Planning and Patient-Specific Rods Improve Radiographic Outcomes Following Spine Surgery
Peter G. Passias, MD, Westbury, NY
Samantha Horn, BA, New York, NY
Frank A. Segreto, BS, Oakdale, NY
Cole Bortz, BA, New York, NY
Dennis Vasquez-Montes, MS, New York, NY
Nicholas Shepard, MD, New York, NY
Renaud Lafage, New York, NY
Virginia Lafage, PhD, New York, NY
Preoperative planning and rod customization improved radiographic alignment outcomes after spine surgery, with greater deformity correction than no planning and standardized rods.

Poster No. P0381
Sagittal Plane Alignment of a Mobile Bearing Cervical Disc Replacement Device: Does Intraoperative Fluoroscopic Positioning Serve as a Reliable Indicator of the Final Postoperative Alignment?
Abhijeet Kadam, MD, Baltimore, MD
David Weiner, MD, Baltimore, MD
Brian Gallagher, MD, Baltimore, MD
Bryan W. Cunningham, PhD, Baltimore, MD
Lauren S. Quattro, RN, Baltimore, MD
Paul J. Tortolani, MD, Baltimore, MD
Early sagittal angulation towards kyphosis when compared to intra-op fluoroscopic alignment can be expected when patients assume upright posture following implantation of mobile bearing TDR devices.

Poster No. P0382
Comparing Allograft to Autograft in Maintaining Cervical Sagittal Parameters following Anterior Cervical Discectomy and Fusion with Anterior Cervical Plating
Steven T. Heidt, BS, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Bryce A. Basques, MD, Chicago, IL
Michael T. Nolte, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Jeremy D. Mormol, BS, Chicago, IL
Gagan Grewal, BS, MS, Chicago, IL
Edward J. Goldberg, MD, Chicago, IL
Howard S. An, MD, Chicago, IL
In patients undergoing an anterior cervical discectomy and fusion with anterior cervical plating, both allograft and autograft incorporation appear successful in maintaining sagittal alignment.
Prevalence of osteopenia and osteoporosis diagnosed by quantitative computed tomography in 296 consecutive lumbar fusion patients was 43.6% and 14.9%, respectively.

Cervical Spine Computed Tomography Hounsfield Units Accurately Predict Low Bone Mineral Density of the Femoral Neck

Hounsfield unit measurements from axial cut computed tomography of the C4 vertebral body accurately correlate with bone mineral density and provide a means for opportunistic screening of osteoporosis.

Rigid Cervical Plate Fixation is Associated with Greater Restoration and Maintenance of Cervical Lordosis compared to Semi-Rigid Plate Fixation in Anterior Cervical Discectomy and Fusion

Rigid plate fixation provides greater restoration and maintenance of cervical lordosis and fusion segment lordosis compared semi-rigid plating.

C2 Tilt: Does it Matter in Patients Undergoing Anterior Cervical Decompression and Fusion for Routine Degenerative Cervical Pathology?

Preoperative and postoperative C2 tilt, an analog of T1 slope minus cervical lordosis, does not correlate with baseline symptoms or any postoperative HRQOL measure for degenerative cervical pathology.

Impact of Lumbar Spinal Surgery on the Healthy Life Expectancy in the Elderly

A retrospective review of 202 lumbar surgery cases over 80 years of age showed that lumbar spinal surgery did not change actual life expectancy itself but could extend healthy life expectancy.

Spinal Fractures in Patients with Diffuse Idiopathic Skeletal Hyperostosis: Clinical Characteristics by Fracture Level

Fractures in patients with diffuse idiopathic skeletal hyperostosis varied distinctly by level of spinal injury. Neurological symptoms were more frequently observed in cervical than in thoracolumbar spine.

Patients with Poor Baseline Mental Health Undergoing Anterior Cervical Discectomy and Fusion have Poorer Patient-Reported Outcomes but Experience a Greater Improvement in Mental Health, Pain, and Disability at Two Years Postoperatively

Poorer baseline mental health demonstrated similar improvement in clinical scores and satisfaction rates up to 2 years after ACDF. These patients also had significant improvement in mental health.
Poster No. P0390
Patient Factors Affecting Emergency Department Utilization and Hospital Readmission Rates after Primary Anterior Cervical Discectomy and Fusion: A Review of 41,813 Cases
Evan Sheha, MD, New York, NY
Stephan N. Salzmann, MD, New York, NY
Sarit Khormae, PhD, New York, NY
Jingyan Yang, MS, New York, NY
Huang Do, MA, New York, NY
Federico P. Girardi, MD, New York, NY
Frank P. Cammisa, MD, New York, NY
Andrew A. Sama, MD, New York, NY
Stephen Lyman, PhD, New York, NY
Alexander P. Hughes, MD, New York, NY
Hospital for Special Surgery SPARCS Study Group

Insurance status, presence of comorbidities, and length of stay >1 day consistently predicted an unplanned hospital visit at both 30 and 90 days after primary anterior cervical disectomy and fusion.

Poster No. P0391
Postoperative Weight-Bearing and Ambulation is Associated with Significant Displacement of the Medial Meniscus Following Posterior Root Repair
Brian Walczak, DO, Madison, WI
Lisa A. Sienkiewicz, MD, Milwaukee, WI
Heather M. Hartwig Stokes, Waunakee, WI
Ronald McCabe, BS, Madison, WI
Geoffrey S. Baer, MD, Madison, WI

Postoperative weight-bearing and ambulation associated with posterior meniscus root displacement following repair.

Poster No. P0392
The Histopathology of the Degenerative Proximal Biceps Tendon
Travis J. Dekker, MD, Durham, NC
Fangyu Chen, BA, Durham, NC
Nicholas F. Kwon, Durham, NC
William C. Eward, MD, Durham, NC
Samuel B. Adams, MD, Durham, NC
Grant E. Garrigues, MD, Durham, NC
Alison P. Toth, MD, Durham, NC

This study shows abnormal architecture, increased staining of painful neurotransmitters, and secretion of substance P from the proximal biceps tendon up to the distal aspect of the bicipital groove.

Poster No. P0393
Influence of Tibial Tuberosity Distalization on Patellofemoral Tracking and Contact Pressures: A Dynamic Computational Simulation Study
Travis J. Jones, MD, Fairlawn, OH
John J. Elias, PhD, Akron, OH
Jason L. Koh, MD, Winnetka, IL

Influence of tibial tuberosity distalization on patellofemoral tracking and contact pressures: a dynamic computational simulation study.

Poster No. P0394
Pitching Performance of Major League Baseball Pitchers Before and After Ulnar Collateral Ligament Reconstruction
John R. Worley, MD, Columbia, MO
Lasun O. Oladeji, MD, MS, Columbia, MO
Seth Sherman, MD, Columbia, MO
Aaron Gray, MD, Columbia, MO

Our data suggest that pitchers who return to the MLB are able to perform similarly to their preinjury level of performance.
Poster No. P0400

Return to Sport Following High Tibial Osteotomy

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Avinesh Agarwalla, Bartlett, IL
Grant Garcia, MD, Mercer Island, WA
David R. Christian, BS, Oconomowoc, WI
Michael Redondo, MA, Burr Ridge, IL
Brian Forsythe, MD, Chicago, IL
Adam B. Yanke, MD, Chicago, IL
Brian J. Cole, MD, MBA, Chicago, IL

In this investigation, we demonstrate that a high percentage of patients return to sport following HTO; however, there is a significant risk of reoperation following this procedure.

Poster No. P0401

Cartilage Regeneration After High Tibial Osteotomy with Allogenic Umbilical Cord Blood-Derived Mesenchymal Stem Cells Therapy for Varus Knee Osteoarthritis: Clinical and Second-Look Arthroscopic Results

Bo-Hyun Hwang, MD, Seoul, Republic of Korea
Su Chan Lee, MD, Seoul, Republic of Korea

Allogenic umbilical cord blood-derived mesenchymal stem cells therapy appears to be a good option for treatment of knee osteoarthritis.

Poster No. P0402

Multiple Concussions Increases Odds and Rate of Lower Extremity Injury in NCAA Collegiate Athletes Following Return to Play

Garrett Harada, BA, Los Angeles, CA
Armin Arshi, MD, Los Angeles, CA
Caitlin Rugg, MD, San Francisco, CA
Jeremy Vail, ATC, PT, Los Angeles, CA
Sharon L. Hame, MD, Los Angeles, CA

Collegiate athletes exposed to multiple concussions over their career are more likely to experience lower extremity injuries than athletes with one or fewer concussions following return to play.

Poster No. P0403

Amniotic Suspension Allograft Decreases Inflammation and Pain in an In Vitro Synoviocyte Inflammation Model, and an In Vivo Monosodium Iodoacetate Model of Osteoarthritis in Rats

Andreas H. Gamoli, MD, New York, NY
Jack Farr, MD, Greenwood, IN
Kelly Kimmerling, MS, PhD, Birmingham, AL
Katie C. Mowry, MS, PhD, Birmingham, AL

ASA decreased inflammation in an inflammatory synoviocyte model and decreased pain and inflammation in an in vivo model of osteoarthritis in rats, suggesting potential clinical benefit of ASA for OA.

Poster No. P0404

Longitudinal Outcomes After High Tibial Osteotomy

Raymond Kenney, MD, Rochester, NY
Martin W. Korn, MD, Penfield, NY

Longitudinal study after dome high tibial osteotomy shows good outcomes and high survivorship.

Poster No. P0405

On-Field Removal of Large Anti-Concussive Football Helmets Using Current Guidelines Leads to Increased Passive Cervical Lordosis

Matthew Hays, Houston, TX
Cameron Dodd, BA, Temple, TX
Mayank Rao, MBA, MBBS, Houston, TX
Ryan J. Warth, MD, Houston, TX
Manickam Kumaravel, FRCS, MD, Houston, TX
Walter R. Lowe, MD, Houston, TX
Mark L. Prasarn, MD, Houston, TX

Larger-diameter football helmets complicate on-field management of suspected cervical spine injuries by increasing passive lordosis during helmet removal in the supine position.

Poster No. P0406

The Effect of Different Oral Contraceptive Hormones on Anterior Cruciate Ligament Strength

Jason L. Dragoo, MD, Redwood City, CA
Jaclyn A. Konopka, BS, Novi, MI
Lauren Hsue, Stanford, CA
Wenteh Chang, PhD, Stanford, CA

ACL strength directly correlated with each OC formulation’s ratio of progesterin to estrogen potency. Norethindrone and Drospirenone and Ethinyl Estradiol formulations led to the strongest ACL specimens.

Poster No. P0407

Prospective Evaluation of Vitamin D Levels and Stress Injury in Collegiate Female Long-Distance Runners

Elizabeth L. McDonald, BA, Bryn Mawr, PA
Kathleen Jarrell, BS, Philadelphia, PA
Steven M. Raikin, MD, Philadelphia, PA
Kristen Nicholson, PhD, Philadelphia, PA
Daniel J. Fuchs, MD, Philadelphia, PA
Brian Winters, MD, Linwood, NJ
Rachel Shakked, MD, Media, PA

Female collegiate distance runners who are vitamin D insufficient are at a higher risk to incur a stress fracture.

Poster No. P0408

Patient-Reported Outcomes at Five-Year Follow Up after Hamstring Versus Patellar-Tendon Autograft for Anterior Cruciate Ligament Reconstruction

Kyle Martin, FRSCS, MD, Winnipeg, MB, Canada
Morten Torheim Andersen, Bergen, Norway
Esben Middtun, Bergen, Norway
Stein Håkon L. Lygre, PhD, Bergen, Norway
Andreas Persson, MD, Oslo, Norway
Lars Engebretsen, MD, Oslo, Norway

This registry-based study of 5,268 ACL reconstructions found no clinically significant difference in patient-reported outcome measures between hamstring tendon and patellar tendon autografts.

Poster No. P0409

A 30-Year Follow Up of a Prospective, Randomized Multicenter Study of Three Operative Techniques for the Treatment of Acute Ruptures of the Anterior Cruciate Ligament

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Anne N. Henriksen, Trondheim, Norway
Tone Gifstad, MD, PhD, Trondheim, Norway
Lars Engebretsen, MD, Oslo, Norway
Anders O. Mølster, MD, PhD, Trondheim, Norway

In this 30-year follow up of a RCT, repairs augmented with a BPTB graft gave superior results regarding revisions compared with both primary repair and repairs augmented with a synthetic LAD device.
Poster No. P0410
The Effect of Operative Time on Short-Term Adverse Events Following Isolated Anterior Cruciate Ligament Reconstruction
Brian Forsythe, MD, Chicago, IL
Avinesh Agarwalla, Bartlett, IL
Aniruddh K. Gowd, Cary, NC
Joseph Liu, MD, Chicago, IL
Grant Garcia, MD, Mercer Island, WA
Daniel D. Bohl, MD, MPH, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL

In this investigation, we establish that 15-minute incremental increase in operative time results in an elevated risk of adverse events following ACL reconstruction.

Poster No. P0411
Early Versus Delayed Surgery Results in Similar Outcomes Following Multiligament Knee Injury: A Prospective Cohort
Daniel Whelan, MD, Toronto, ON, Canada
Matthew Rubacha, MD, Toronto, ON, Canada
Ryan Khan, Toronto, ON, Canada
Graeme Hoit, MD, Toronto, ON, Canada

Early versus delayed surgery results in similar outcomes following multi-ligament knee injury; a prospective cohort.

Poster No. P0412
Anterior Cruciate Ligament Reconstruction Using an All-Inside Short-Graft Technique vs. a Conventional Hamstring Technique: A Prospective, Randomized Comparative Study with Two-Year Follow Up
Panagiotis K. Noridix, Athens, Greece
Elstatios Kavroudakis, MD, MSc, Amarousion, Greece
Elstatios Charalampidis, MD, Pallini, Greece
Georgios Triantafyllopoulos, MD, Athens, Greece

In the present prospective, comparative study, the all-inside ACL reconstruction with a short ST4 autograft and cortical button fixation on both ends was found a viable solution.

Poster No. P0413
Anterior Cruciate Ligament Graft Failure in Professional Athletes
Nirav K. Pandya, MD, Oakland, CA
Brian T. Feeley, MD, San Francisco, CA
Drew Lansdown, MD, San Francisco, CA
William J. Rubenstein, MD, San Francisco, CA
Sachin Allahabad, MD, San Francisco, CA

ACL retear rates in professional athletes are higher than the general population but similar to pediatric patients.

Poster No. P0414
Prospective Study of Acute Opioid Use after Adolescent Anterior Cruciate Ligament Reconstruction Shows No Effect from Patient or Surgical Related Factors
Jennifer Beck, MD, Los Angeles, CA
Kelly E. Cline, MD, Dallas, TX
Sophia Sangiorgio, PhD, Los Angeles, CA
Rebecca Serpa, Los Angeles, CA
Kendall A. Shifflett, BS, Los Angeles, CA
Richard E. Bowen, MD, Los Angeles, CA

Majority of patients self-administer pain medication during the first postoperative week, and patient and surgical variables had no significant influence on pill consumption following adolescent ACLR.

Poster No. P0415
Predictors of Operative Duration in Arthroscopically-Assisted Anterior Cruciate Ligament Reconstruction
Eric Cotter, MD, Madison, WI
Kevin C. Wang, MD, Chicago, IL
Brian R. Waterman, MD, Winston-Salem, NC
Brian J. Cole, MD, MBA, Chicago, IL
Julie A. Dodds, MD, East Lansing, MI

This study utilizes a new, nationwide database of patient cases from >100 surgeons and provides insight into variables associated with operative duration for ACL-R.

Poster No. P0416
Internally Braced Versus Standard Anterior Cruciate Ligament Reconstruction: A Matched Cohort Analysis
Blake Bodendorfer, MD, Washington, DC
Evan M. Michaelson, BS, MS, Washington, DC
Henry T. Shu, Washington, DC
Nicholas A. Apseloff, MD, Washington, DC
James D. Spratt, MS, Washington, DC
Esther Nolton, ATC, MEd, Centreville, VA
Evah E. Arginter, MD, MD, Chey Chase, MD

In this matched cohort analysis of internally braced ACL reconstructions, patients with internal braces had superior patient-reported outcomes and earlier and higher percentage of return to play.

Poster No. P0417
Extra-Articular Tenodesis Do Not Result in an Overconstraint with Increased Rate of Degenerative Osteoarthritis of Lateral Compartment when Associated to Anterior Cruciate Ligament Reconstruction: A 15-year Follow Up
Andrea Ferretti, MD, Rome, Italy
Antonio Ponzo, MD, Roma, Italy
Piergiorgio Drogo, MD, Rome, Italy
Valerio Andreozzi, MD, Rome, Italy
Ludovico Caperna, MD, Rome, Italy
Fabio Conteduca, MD, Roma, Italy
Edoardo Monaco, MD, Rome, Italy

Adding a lateral tenodesis to an ACL reconstruction with hamstrings seems to improve rotator knee stability, not increasing development of overall rate of DOA and over-constraint of lateral compartment of the knee.

Poster No. P0418
Long-Term Clinical and Radiographic Results of Anterior Cruciate Ligament Reconstruction: Retrospective Comparison between Three Techniques (Hamstrings Autograft, Hamstrings Autograft with Extra-Articular Reconstruction, Bone Patellar Tendon Bone Autograft
Pierpaolo Rota, Rome, Italy
Edoardo Monaco, MD, Rome, Italy
Antonio Ponzo, MD, Roma, Italy
Ivan De Martino, MD, Roma, Italy
Riccardo Maria Lanzetti, Rome, Italy
Pierfrancesco De Santis, Rome, Italy
Andrea Ferretti, MD, Rome, Italy

ACL reconstruction: A long-term comparison of three techniques.
Poster No. P0419
In Vivo Relationship between Graft Isometricity and Tunnel Positions in Single Bundle Anterior Cruciate Ligament Reconstruction

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Min Jung, MD, Seoul, Republic of Korea
Sang-Woo Jeon, MD, Seoul, Republic of Korea
Tae-Hwan Yoon, Seoul, Republic of Korea
Chong-Hyuk Choi, Seoul, Republic of Korea
Sung-Jae Kim, MD, Seoul, Republic of Korea

Following anatomical single bundle ACL reconstruction the intra-articular graft length change during knee flexion showed non-isometric behavior during early knee flexion below 60°.

Poster No. P0420
No Difference in Outcomes between Femoral Fixation Methods with Hamstring Autograft in Anterior Cruciate Ligament Reconstruction – A Network Meta-Analysis

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Arianna Gianakos, DO, Jersey City, NJ
Utkarsh Anil, BA, New York, NY
Eric J. Strauss, MD, Scarsdale, NY
Guillem Gonzalez-Lomas, MD, New York, NY

There is no difference in clinical outcome between different femoral fixation methods for hamstring autograft in ACL reconstruction.

Poster No. P0421
Tibial Tunnel Widening Following Anterior Cruciate Ligament Reconstruction: A Retrospective Seven-Year Study Evaluating the Effects of Initial Graft Tensioning and Graft Selection

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Naga Padmini Karamchedu, MS, Providence, RI
Brett D. Owens, MD, East Providence, RI
Steven L. Bokshan, MD, Providence, RI
Paul Fadale, MD, Providence, RI
Michael J. Hulstyn, MD, Providence, RI
Robert Salvo, MD, Pawtucket, RI
Gary J. Badger, MS, Burlington, VT
Braden C. Fleming, PhD, Providence, RI

Patients who undergo ACL-R with HS autograft undergo tibial tunnel widening over 7 years. In contrast, patients with BTB autografts did not experience widening, regardless of initial graft tension.

Poster No. P0422
Gait Mechanics Differ Two Years after Anterior Cruciate Ligament Reconstruction Based on Medial Meniscus Treatment

Jacob J. Capin, BS, DPT, Newark, DE
Ashutosh Khandha, PhD, Newark, DE
Kurt Manal, PhD, Newark, DE
Thomas S. Buchanan, PhD, Newark, DE
Lynn Snyder-Mackler, PhD, Newark, DE

Athletes 2 yrs after ACL reconstruction with partial medial meniscectomy compared to those without have altered gait mechanics (including medial tibiofemoral overloading) and quadriceps weakness.

Poster No. P0423
The Effect of the Anterolateral Complex and Lateral Meniscus Injury on the Knee Laxity in Anterior Cruciate Ligament Deficient Knee

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In Jun Koh, MD, PhD, Seoul, Republic of Korea
Michelle H. McGarry, MD, Long Beach, CA
Nilay Patel, MD, Orange, CA
Charles Lin, BS, Orange, CA
Thay Q. Lee, PhD, Long Beach, CA

We proved the important role of ALL for knee stability, comparing with the effect of ACL sectioning and LMPH meniscectomy. This result can supply the clinical relevance of the ALL injury that should be assessed in ACL injured knee in order to avoid residual.

Poster No. P0424
Risk Factors and 30-Day Complication Rates Following Medial Patellofemoral Ligament Reconstruction and Tibial Tubercle Osteotomy

Brian Forsythe, MD, Chicago, IL
Avinesh Agarwalla, Bartlett, IL
Anirudh K. Gowd, Cary, NC
Joseph Liu, MD, Chicago, IL
Richard N. Fussitiello, Chicago, IL
Adam B. Yanke, MD, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL

In this investigation we establish that performing additional procedures with MPFL reconstruction increases operative time but does not increase the risk of complication.

Poster No. P0425
Reliability of Preoperative MRI Prediction of Hamstring Anterior Cruciate Ligament Autograft Size and Comparison of Radiologist and Orthopaedic Surgeon Predictions

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Kelley Whitmer, MD, Roanoke, VA
Christopher K. John, MD, Roanoke, VA
Brent M. Johnson, MD, Roanoke, VA
Jonathan A. Godin, MD, Roanoke, VA
Thomas K. Miller, MD, Roanoke, VA

Prospective study evaluating the reliability of routine preoperative MRI to predict ACL graft size, and the ability of orthopaedic surgeons to determine graft size when compared to a radiologist.

Poster No. P0426
Effects of Anterior Cruciate Ligament Reconstruction on National Football League Performance

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Richard Danilkowicz, BA, MA, Chicago, IL
Gary Edwards, MD, Chicago, IL
Jared M. Forman, BA, Oceanside, CA
Feroz Osmani, Chicago, IL
Amit D. Parekh, MD, Chicago, IL
Mark R. Hutchinson, MD, Elmhurst, IL

ACL reconstruction is a highly successful surgery and affords a large majority of players to return to competition.
Poster No. P0427
The Influence of Segond Fracture on Outcomes After Anterior Cruciate Ligament Reconstruction
Sanggyun Kim, Seoul, Republic of Korea
Kyong Ho Yoon, MD, Seoul, Republic of Korea
Sang Eon Park, Seoul, Republic, of Korea
Eungju Kim, Seoul, Republic of Korea
Yooboom Kwon, MD, Seoul, Republic of Korea
Jungsuk Kim, Seoul, Republic of Korea

The presence of a Segond fracture did not affect pre- and postoperative clinical scores and knee joint stability in patients who had an anterior cruciate ligament reconstruction.

Poster No. P0428
Primary Repair of the Anterior Cruciate Ligament: A Systematic Review of Clinical Outcomes
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Matthew J. Kraeutler, MD, Cedar Grove, NJ
John W. Belk, Boulder, CO
Mary K. Mulcahey, MD, New Orleans, LA
Jonathan T. Bravman, MD, Golden, CO
Eric C. McCarty, MD, Boulder, CO

Primary ACL repair has high failure rates in comparison to the rates of ACL reconstruction failure reported in the literature.

Poster No. P0429
Does the Use of A Hybrid Graft Alter Graft Failure Rates or Outcomes in Anterior Cruciate Ligament Reconstruction? A Systematic Review and Meta-Analysis
D’Ann Arthur, MD, Redondo Beach, CA
Jennifer Beck, MD, Los Angeles, CA
Edward Ebramzadeh, PhD, Los Angeles, CA
Sophia Sangiorgio, PhD, Los Angeles, CA
Natalie Khalil, LA Jolla, CA

Supplementation of hamstring autograft with allograft to form a hybrid graft for anterior cruciate ligament reconstruction did not alter the graft failure rate.

Poster No. P0430
Variation in Narcotic Prescriptions Following Primary Anterior Cruciate Ligament Reconstruction at a Tertiary Academic Institution
James Feng, MD, New York, NY
Utkarsh Anil, BA, New York, NY
Mathew Hamula, MD, New York, NY
Abigail L. Campbell, MD, New York, NY
Joseph A. Bosco III, MD, New York, NY
Kirk A. Campbell, MD, NY, NY
Eric J. Strauss, MD, Scarsdale, NY

There is significant variability in narcotic prescription after primary ACL reconstruction both between and within surgeons at the same institution.

Poster No. P0431
Timeline for Maximal Subjective Outcome Improvement Following Anterior Cruciate Ligament Reconstruction
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Richard N. Puzzitiello, Chicago, IL
Joseph Liu, MD, Chicago, IL
Gregory L. Cvetanovich, MD, Columbus, OH
Anirudh K. Gowd, Cary, NC
Nikhil N. Verma, MD, Chicago, IL
Brian J. Cole, MD, MBA, Chicago, IL

In this investigation, we establish that patients establish subjective maximal medical improvement by 1 year following ACL reconstruction.

Poster No. P0432
Patient-Reported Outcomes Following Isolated Medial Patellofemoral Ligament Reconstruction for Patellar Instability
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Brandon Erickson, MD, New York, NY
Katelyn Gasik, ATC, MSc, New York, NY
Simone Gruber, BA, New York, NY
Beth E. Shubin Stein, MD, New York, NY

Patients undergoing MPFL reconstruction have improved outcomes as early as 1 year postsurgery and have high rate of return to sport. Successful outcomes are sustained at 2 and 3 years post-op.

Poster No. P0433
Patient Related Risk Factors for Infection Following Arthroscopic Anterior Cruciate Ligament Reconstruction: A Review of 12,375 Cases
Jourdan M. Cancienne, MD, Charlotteville, VA
Brian C. Werner, MD, Charlotteville, VA

The present study is the first to identify male sex, obesity, and morbid obesity as risk factors that significantly increase the risk of infection following ACL reconstruction.

Poster No. P0434
Sooner than You Think: The Effect of Delayed Primary Anterior Cruciate Ligament Reconstruction on Medial Compartment Cartilage and Meniscus Health
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Moneer M. Abouljoud, BS, Grosse Pointe Park, MI
Alex Dibartola, MD, Columbus, OH
Robert A. Magnussen, MD, Worthington, OH
Christopher C. Kaeding, MD, Columbus, OH
David C. Flanigan, MD, Columbus, OH

Among 609 patients who underwent primary ACLR, delayed surgery greater than 8 weeks increased risk of medial meniscus damage and delay greater than 5 months increased risk of medial chondral damage.

Poster No. P0435
The Fate of Anterior Cruciate Ligament Tears Treated Conservatively: Risk of Subsequent Surgery
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Lue-Yen Tucker, BA, Oakland, CA
Henry Krigbaum, MD, San Francisco, CA
Alex C. Lau, MD, Brisbane, CA
James M. Colville, MD, Sausalito, CA

ACL tears treated conservatively have a 32% chance of subsequent knee operations.

Poster No. P0436
Causes and Clinical Outcomes of Spontaneous Osteonecrosis/Subchondral Insufficiency Fractures of the Knee
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Laurel A. Barras, MD, Rochester, MN
Vishal Desai, BS, Rochester, MN
Christopher L. Camp, MD, Rochester, MN
Daniel B. Saris, MD, Ph D, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN

There is a high incidence of subchondral insufficiency fractures in older women involving the medial compartment. The most common etiology is meniscal tears and there is a high failure rate.
Poster No. P0437
Default Opioid Order Quantities Associated with Reduced Opioid Prescribing for Simple Knee Arthroscopy
M. Kit Delgado, MD, Philadelphia, PA
Jessica Hemmons, Philadelphia, PA
Evan Spencer, BS, Philadelphia, PA
Yanlan Huang, Philadelphia, PA
Michael Ashburn, MD, MPH, Philadelphia, PA
Rachel Kleinman, Philadelphia, PA
Bobbiann Sennett, NP, Newtown, PA
Samir Mehta, MD, Philadelphia, PA
Brian J. Sennett, MD, Philadelphia, PA

Setting patient-informed opioid defaults are a promising approach for reducing excessive opioid prescriptions while maintaining adequate pain control.

Poster No. P0438
Pullout Fixation for Medial Meniscus Posterior Root Tears: Clinical Results were not Age Dependent
Kyu-Sung Chung, MD, PhD, Seoul, Republic of Korea
Ha Jeong Ku, MD, Seoul, Republic of Korea
Ho Jong Ra, MD, PhD, Gangneung, Republic of Korea
Yoonseok Kim, Seoul, Republic of Korea
Inkeun Park, Seoul, Republic of Korea
Jin Goo B. Kim, MD, PhD, Seoul, Republic of Korea

Clinical results were not age dependent after pullout fixation for medial meniscus posterior root tears.

Poster No. P0439
Worsening of Radiographic Knee Osteoarthritis Following Medial Meniscus Root Tears and Non-Root Tears
Caitlin Chambers, MD, San Francisco, CA
John A. Lynch, PhD, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA
Michael Nevitt, PhD, San Francisco, CA

An observational study of 78 medial meniscus root tears and 1,030 non-root tears reveals significantly more radiographic osteoarthritis within twelve months of meniscal root injury than non-root tear.

Poster No. P0440
Comparison of Traditional Physical Therapy to Internet-Based Physical Therapy after Knee Arthroscopy: A Prospective Randomized Controlled Trial Comparing Patient Outcomes and Satisfaction
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Meredith P. Crizer, Philadelphia, PA
Steven B. Cohen, MD, Media, PA
William D. Emper, MD, Bryn Mawr, PA
Sommer Hammond, MD, Philadelphia, PA
Michael G. Ciccotti, MD, Philadelphia, PA
Kevin B. Freedman, MD, Bryn Mawr, PA
Shyam Brahmbhatt, MD, Lower Gwynedd, PA
Donald W. Mazur, MD, Philadelphia, PA

The results of our study indicate that patients using internet-based PT performed as well as patients using traditional outpatient PT following knee arthroscopy for partial meniscectomy.

Poster No. P0441
Do Local Anesthetic Arthroscopic Portal Injections Decrease Pain after Knee Arthroscopy
Ian J. Dempsey, MD, Charlottesville, VA
Abdurrahman Kandil, MD, Herndon, VA
Marc Lipman, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA
Jourdan M. Cancienne, MD, Charlottesville, VA
David R. Diduch, MD, Cambridge, MA
Eric W. Carson, MD, Charlottesville, VA

Use of local anesthetic at the time of knee arthroscopy was found to result in a significant reduction in patient reported pain scores in this prospective, randomized controlled study.

Poster No. P0442
Return to School Following Orthopaedic Sports Medicine Procedures: A Prospective Study of Adolescents and Young Adults
Zaira Chaudhry, MPH, Scranton, PA
Shelby R. Smith, BS, Middletown, DE
Christopher J. Hadley, BS, Barnegat, NJ
John P. Salvo, MD, Voorhees, NJ
Christopher Dodson, MD, Philadelphia, PA
Steven B. Cohen, MD, Media, PA
Kevin B. Freedman, MD, Bryn Mawr, PA
Sommer Hammoud, MD, Philadelphia, PA

This is a prospective study evaluating mean time to return to school and short-term postoperative academic performance in adolescents and college students undergoing common sports medicine procedures.

Poster No. P0443
Descriptive Epidemiology Study of the Justifying Patellar Instability Treatment by Early Results (JUPITER) Cohort
Meghan E. Bishop, MD, Philadelphia, PA
Jacqueline M. Brady, MD, Portland, OR
Daphne Ling, MPH, PhD, New York, NY
Shital N. Parikh, MD, Cincinnati, OH
Beth E. Shubin Stein, MD, New York, NY

This study presents preliminary descriptive analysis of the JUPITER cohort, a multicenter, multiarmed prospective cohort study of young patients with patellar instability.

Poster No. P0444
Epidemiology of Patellar Injuries in Collegiate Athletes in the United States from 2009-2014
Jeffrey D. Trojan, MS, New Orleans, LA
Josh A. Treloar, BS, New Orleans, LA
Christopher M. Smith, MD, Camden, NJ
Mary K. Mulcahey, MD, New Orleans, LA

Description of patellofemoral injuries in 25 NCAA sports over a 5-year period using a national database.
Poster No. P0445
Do Tibial Eminence Fractures and Anterior Cruciate Ligament Tears have Similar Outcomes?
Heath Melugin, MD, Rochester, MN
Vishal Desai, BS, Rochester, MN
Christopher L. Camp, MD, Rochester, MN
Timothy E. Hewett, PhD, Rochester, MN
Todd A. Milbrandt, MD, Rochester, MN
Diane L. Dahm, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN

Do tibial eminence fractures and anterior cruciate ligament tears have similar outcomes?

Poster No. P0446
How Long Should We Continue FIFA 11+?
Junuske Nakase, MD, Kanazawa, Japan
Kengo Shimozaki, Kanazawa, Japan
Kazuki Asai, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We investigated the changes in muscle activity using PET-CT after performing FIFA 11+ for 4 weeks and 6 months. Considering the effect on the core muscle, FIFA 11+ should continue for more than 6 months.

Poster No. P0447
Fear of Reinjury Coincides with Inferior Quadriceps Strength, Function, and Patient-Reported Outcomes Six Months after Anterior Cruciate Ligament Reconstruction
Brian Noehren, PT, PhD, Lexington, KY
Cale Jacobs, PhD, Lexington, KY
Mary L. Ireland, MD, Lexington, KY
Darren L. Johnson, MD, Lexington, KY

Fear of reinjury following an ACL reconstruction impacts quadriceps strength, function, as well as common patient-reported outcome measures.

Poster No. P0448
Healthy Pediatric Athletes Have Significant Baseline Limb Asymmetries on Common Return to Sports Performance Tests
John R. Magill, DPT, PT, Durham, NC
Heather Myers, ATC, DPT, Durham, NC
Valentine R. Esposito, BS, Durham, NC
Trevor Lentz, MPH, PhD, Durham, NC
Michael Messer, DPT, PT, Durham, NC
Emily K. Reinke, PhD, Durham, NC
Jonathan C. Riboh, MD, Durham, NC

Healthy pediatric athletes are shown to have significant baseline asymmetries on commonly used return to sport tests, questioning validity of limb symmetry indices.

Poster No. P0449
Transosseous versus Anchor Repair of Acute Patellar Tendon Ruptures: 374 Cases
James O'Dowd, Los Angeles, CA
David Lhoang, Beverly Hills, CA
David O. DeWitt, PA, La Verne, CA
Rebecca Butler, Pasadena, CA
Raffy Mirzayan, MD, Baldwin Park, CA

Review of 374 acute patellar tendon ruptures with comparison of clinical outcomes between transosseous suture repair and suture anchor repair.

Poster No. P0450
Performance-Based Outcomes After Achilles Tendon Repair Vary Significantly in Professional Athletes Depending on the Sport Played
Gurmit Singh, BS, North Chicago, IL
Sumender O. Sharma, North Chicago, IL
Kenneth Furlough, Chicago, IL
Vehniah K. Tjong, MD, Chicago, IL
Wellington K. Hsu, MD, Chicago, IL

National Basketball Association (NBA) athletes exhibit the worst prognosis in terms of performance after a successful return to play from an Achilles tendon repair compared to other athletes.

TRIUMA

Poster No. P0451
Timing of Definitive Fixation of Isolated Pelvic and Acetabulum Fractures Does Not Impact Blood Loss, Blood Product Transfusion, and Operating Room Time
Wayne Cohen-Levy, BA, MD, Miami, FL
Augustus Rush, MD, Miami, FL
Jonathan I. Sheu, BS, Miami, FL
Joshua P. Goldstein, Miami, FL
Stephen M. Quinnan, MD, Miami, FL

Timing of definitive fixation of patients with isolated pelvic and acetabulum fractures is not predictive of estimated blood loss, operative time, or the need for blood product transfusions.

Poster No. P0452
Bleeding and Mortality in Early Hip Fracture Surgery: The Effect of Clopidogrel
Nicholas Kolodychuk, BS, MD, Gilbert, AZ
Jerome S. Palmer, New Orleans, LA
Michael Wang, River Ridge, LA
James Mautner, MD, New Orleans, LA

Clopidogrel use does not increase clinically significant bleeding or mortality in hip fracture patients undergoing early surgery.

Poster No. P0453
Value of the Trauma Service Line: Revenue Related to Follow Up for Injury and Noninjury Related Care
Christopher Flanagan, MD, Cleveland, OH
Alexander S. Rascoe, MD, Cleveland, OH
David M. Wang, BA, Cleveland Heights, OH
Heather A. Vallier, MD, Cleveland, OH

Understand the value of the trauma service in generating revenue unrelated to the trauma is an important economic consideration in providing trauma care.

Poster No. P0454
Developing a Virtual Hand and Wrist Fracture Clinic: A Quality Improvement Initiative
Douglas J. Evans, MBBS, Surrey, United Kingdom
Pooja Panchasara, Hayes, United Kingdom
Joelle Chatimer, London, United Kingdom
Alan J. Poots, MA, MSc, Oxford, United Kingdom
Mable A. Nakubulwa, PhD, London, United Kingdom
Wendy Carnegie, MSc, London, United Kingdom
Scott Middleton, MD, Edinburgh, United Kingdom
Andrew Harrison, MBBS, London, United Kingdom
Jonas Schwenc, BA, MBB, Camberley, United Kingdom
Fatima Ogunlayi, MSc, London, United Kingdom
Raymond E. Anakwe, FRCS (Ortho), MBCHB, London, United Kingdom

Virtual fracture clinics are one potential solution to the increasing trauma workload. They can offer a high quality (safe, effective, efficient, timely, equitable, and patient centered) model of care.
Poster No. P0455
A Dual Motor Drill Continuously Measures Drilling Energy to Calculate Bone Density and Screw Pull-Out Force in Real Time
Brian B. Gilmer, MD, Mammoth Lakes, CA
Sarah D. Lang, ATC, MEd, Mammoth Lakes, CA
A dual motor drill was created to measure energy while drilling and instantly calculate bone density and pull out force. The accuracy of these calculations was confirmed in a unicortical bone model.

Poster No. P0456
Biomechanical Comparisons of Interfragmentary Positional Screws versus Lag Screws
Erik A. Lund, MD, Tampa, FL
Thomas Sellars, MD, Tampa, FL
Miguel Diaz, MS, Tampa, FL
Brandon G. Santoni, PhD, Tampa, FL
Hassan R. Mir, MD, MBA, Tampa, FL
Biomechanical tests of positional (PS) vs. lag screws, revealed PS maintain equivalent reduction, have higher pullout strength, less purchase, and less compression in an humeral shaft fracture model.

Poster No. P0457
Loop Anchor Tension Band Technique for Patellar Fractures Lowers the Rate of Kirschner's Wire Migration
Shu Fan Lin, Chiayi, Taiwan
Chun-Ho Chen, MD, Chiayi City, Taiwan
Ting Chien Tsai, MD, Chiayi, Taiwan
Cheng Ying Yen, Chiayi, Taiwan
Shu-Hsin Yao, Chiayi, Taiwan
Cheng-Yi Wu, Chiayi City, Taiwan
Lo Sheng Pin, MD, Tainan City, Taiwan
Yu Meng Hsiao, Tainan, Taiwan
Chen-Hao Chiang, MD, Tainan, Taiwan
Loop anchor tension band wiring technique is a new method for preventing implants pulled-out. This new method lowers the incidence of implants loosening or irritation dramatically.

Poster No. P0458
A Dual Motor Drill Reduces Plunge, Simultaneously Gauges Depth, and Saves Time When Placing Orthopaedic Screws
Sarah D. Lang, ATC, MEd, Mammoth Lakes, CA
Brian B. Gilmer, MD, Mammoth Lakes, CA
Use of a dual motor drill reduced overpenetration, improved measurement accuracy, and reduced time spent during placement of orthopaedic hardware.

Poster No. P0459
Skeletal Stem Cell Characteristics in Iliac Crest Bone Graft and Clinical Implications in Fracture Nonunion Repair
Nury Yim, MD, New York, NY
Daibiel M. Bravo, MD, New York, NY
John Buza, MD, New York, NY
Kenneth A. Egol, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Age and body mass index may influence frequency of skeletal stem cells in iliac crest bone graft, and stem cell frequency may aid as a predictor of healing time in fracture nonunion repair.

Poster No. P0460
How does Patient Demographic Influence the Number of Stem and Progenitor Cells Harvested in Human Bone Marrow Aspiration: A Clinical Study of 393 Patients
Nicolas S. Piauzzi, MD, Shaker Heights, OH
Cynthia Boehm, Cleveland, OH
Wesley A. Bova, BS, Cleveland, OH
Venkata R. Mantripragada, PhD, Cleveland, OH
Jaiben George, MBBS, Cleveland, OH
George F. Muschler, MD, Cleveland, OH
Clinical variation in yield, concentration, and prevalence of stem and progenitor cells harvested using bone marrow aspiration based on 393 patient demographics (age, gender, height, and weight).

Poster No. P0461
Demonstrating Osteoinductive Potential of a Decellularized Xenograft Bone Graft Substitute
Alexander Jinnah, MD, Winston-Salem, NC
Daniel Bracey, MD, Winston-Salem, NC
Patrick W. Whitlock, MD, Cincinnati, OH
Thorsten M. Seyler, MD, PhD, Durham, NC
Ian Hutchinson, MD, Albany, NY
Kerry Danielon, PhD, Winston-Salem, NC
Thomas L. Smith, PhD, Winston-Salem, NC
Cynthia L. Emory, MBA, MD, Winston-Salem, NC
Bethany Kerr, PhD, Winston-Salem, NC
Our group identified the osteoinductive potential of a porcine xenograft is maintained following treatment with a novel decellularization and oxidation protocol.

Poster No. P0462
Factors Associated with Fracture-Related Malpractice Litigation
Shaan Ahmed, Providence, RI
Syed J. Naqvi, MD, Anaheim, CA
Adam E. Eltorai, Providence, RI
Steven Defroda, MD, Providence, RI
Alan H. Daniels, MD, Providence, RI
Fracture-related malpractice lawsuits were analyzed using a legal database, and revealed that fracture cases with paralysis were more likely to result in a plaintiff-favorable outcome.

Poster No. P0463
Inflammatory Cytokines Provide Unique Predictive Value Beyond Injury Severity: A Prospective Cohort Study of Orthopaedic Trauma Patients
Boshen Liu, MD, Lexington, KY
Arun Aneja, MD, Lexington, KY
Alejandro Marquez-Lara, MD, Winston-Salem, NC
David C. Landy, MD, Chicago, IL
Peter Mittwede, MD, Pittsburgh, PA
Seth Phillips, DO, Toledo, OH
Lusha Xiang, San Antonio, TX
George V. Russell, MD, Jackson, MS
Inflammatory cytokines offers unique insights to predict hospital and ICU length of stay that is not explained by injury severity score alone.
Poster No. P0464
Impact of Malnutrition on Early Mechanical Ventilation Requirement in Patients with Pelvic and Acetabular Trauma

Adam Boissonneault, MBCHB, Atlanta, GA
Michael A. Maceroli, MD, Atlanta, GA
Christopher A. Staley, BA, Atlanta, GA
Amalie Erwood, BS, Atlanta, GA
Madeline Roorbach, BA, Atlanta, GA
Richard Johnson, MD, Atlanta, GA
Mara L. Schenker, MD, Atlanta, GA

Malnutrition is an independent, modifiable risk factor for early mechanical ventilation in patients who present with pelvic and acetabular trauma.

Poster No. P0465
Expectations for Recovery and Opioid Use After Injury: A Survey of Orthopaedic Trauma Patients

Michael T. Torchia, MD, Lebanon, NH
Daniel Austin, MD, White River Junction, VT
Samantha G. Auyt, MS, Durham, NH
David S. Jevsevar, MD, MBA, Grantham, NH
Ida L. Gitajn, MD, Hanover, NH

Orthopaedic trauma patients have wide variation in their expectations for recovery, and most expect to remain on opioids for <2 weeks.

Poster No. P0466
Secondary Transfer from the C-Arm Drape is a Source of Contamination During Intraoperative Fluoroscopy

David Zueitner, MD, Lexington, KY
Jerad D. Allen, MD, Lexington, KY
Joseph R. Hsu, MD, Charlotte, NC
Paul E. Matuszewski, MD, Lexington, KY

Secondary contamination of the surgical field from the C-arm occurs. The area most prone to contamination is the area adjacent to the fluoroscopy unit, usually opposite the surgeon.

Poster No. P0467
Perceptions of Psychological Well-Being After Injury: A Survey of Orthopaedic Trauma Patients

Michael T. Torchia, MD, Lebanon, NH
Daniel Austin, MD, White River Junction, VT
Samantha G. Auyt, MS, Durham, NH
Ida L. Gitajn, MD, Hanover, NH

This survey offers insights into patient’s perceptions of how psychological health influences physical recovery, and patient preferences for treatments to improve psychological health after injury.

Poster No. P0468
Financial Impact and Effect on the Outcome of Preoperative Tests for At-Risk Older Hip Fracture Patients

Tomer Ben-Tov, MD, Tel Aviv, Israel
Ely L. Steinberg, MD, Rishon LeZion, Israel
Shai Factor, MD, Kfar Saba, Israel
Yaniv Warschawski, Tel Aviv, Israel
Dani Rotman, Givatayim, Israel
Jacov Elis, MD, PhD, Tel Aviv, Israel
Gil Rachevsky, MPH, MPT, Tel Aviv, Israel
Moshe Salai, MD, Tel Aviv, Israel

Non-routine preoperative tests prolong time-to-surgery, increased hospitalization time, and contribute to 30-day mortality. No postoperative procedure was related to preoperative test findings.

Poster No. P0469
Biomechanical Analysis of Vertical Pauwels Type III Femoral Neck Fracture Fixation Using a Novel Dynamic Hip Screw Power Triangle Configuration

Michael Yee, MD, Ann Arbor, MI
Todd Conlan, MD, Memphis, TN
Jaron Scott, MS, Ypsilanti, MI
Laura E. Blum, MD, Plymouth, MI
Ryan Charles, MD, Ann Arbor, MI
Mark Hake, MD, Ann Arbor, MI
Aaron M. Perdue, MD, Ann Arbor, MI

This study evaluates the biomechanical properties of a novel Power Triangle construct for the fixation of high angle femoral neck fractures compared to two other commonly used fixation constructs.

Poster No. P0470
Long-Term Patient Reported Outcomes after Total Hip Arthroplasty for Displaced Hip Fractures

Scott Middleton, MD, Edinburgh, United Kingdom
Neil D. McNiven, MD, Carlisle, United Kingdom
Raymond E. Anakwe, FRCS (Ortho), MBCHB, London, United Kingdom
Paul J. Jenkins, FRCS (Ortho), MBCHB, Glasgow, United Kingdom
Stuart Attken, MD, Augusta, ME
Paul Stirling, BSc(Hons), MBCHB, Edinburgh, United Kingdom
John F. Keating, Scotland, United Kingdom
Matthew Moran, MSc, FRCS (Ortho), Edinburgh, United Kingdom

This study defines the long-term outcomes following THA. Complication rates are similar to those of elective THA and excellent outcomes and satisfaction scores are sustained at long-term follow up.

Poster No. P0471
Is Parkinson’s Disease Associated with Worse Outcomes Following Hip Replacement After Hip Fracture?

Peter Coudde, MD, Llanelli, United Kingdom
James Palliot, DDS, MBCHB, Broadlands, United Kingdom
Maziar Mohaddes, MD, Molndal, Sweden
Szilard Nemes, Gotteborg, Sweden
Daniel Odin, Gothenburg, Sweden
Cecilia Rogmark, MD, PhD, Malmo, Sweden

Patients with PD had worse outcomes following total- or hemiarthroplasty following hip fracture, with increased risks of revision and long-term mortality.

Poster No. P0472
The Incidence of Subsequent Fractures in the Two Years Following a Femoral Neck Fracture Treated with Internal Fixation

Earl R. Bogoch, MD, Toronto, ON, Canada
Emil H. Schemitsch, MD, London, ON, Canada
Qi Zhou, PhD, Dundas, ON, Canada
Sofia Bzovskya, Hamilton, ON, Canada
Mohit Bhandari, MD, FRCS, Hamilton, ON, Canada
Marc F. Swiontkowski, MD, Minneapolis, MN
Sheila Sprague, PhD, Hamilton, ON, Canada

In this study, 6.5% of patients experienced a subsequent fracture after an index low energy hip fracture. A low proportion of patients were taking osteoporosis medication pre- and postfracture.
Poster No. P0473
Lauren Casnovsky, MD, Saint Paul, MN
Melissa White, BA, Lakeville, MN
Harsh R. Parikh, Plymouth, MN
Ann E. Van Heest, MD, Minneapolis, MN
Brian Cunningham, MD, Saint Paul, MN

The increasing use of intramedullary nailing over the last 20 years has led to an increase in total implant costs without influencing patient outcomes.

Poster No. P0474
Low Positive Predictive Value of Bone Scan to Predict Impending Complete Fracture among Incomplete Atypical Femoral Fracture
Jae-Hwi No, Seoul, Republic of Korea
Young-Kyun Lee, MD, Seongnam, Republic of Korea
You-Sung Park, Seoul, Republic of Korea
Jung Taek Kim, MD, Suwon, Republic of Korea
Yong-chan Ha, Prof, Seoul, Republic of Korea
Tae-young Kim, MD, PhD, Wayne, PA
Chan Ho Park, MD, Seoul, Republic of Korea
Jun Il Yoo, Jinju, Republic of Korea
Byung Woong Jang, Seoul, Republic of Korea
Woo Lam Jo, Seoul, Republic of Korea
Kyung-Hoi Koo, MD, Seongnam, Republic of Korea
SNUBHOSHIP

Bone scan has no significant role in detecting the impending complete fracture, and a positive uptake does not mean the necessity of prophylactic fixation of incomplete atypical femoral fracture.

Poster No. P0475
The Influence of Preoperative Antiplatelet and Anticoagulant Agents on the Outcomes in Elderly Hip Fractures with Early Surgery
Ken Ueoka, Kanazawa City, Japan
Takeshi Sawaguchi, MD, PhD, Toyama, Japan
Kenichi Goshima, MD, Kanazawa, Japan
Shintaro Iwai, MD, Kanazawa, Japan
Tamon Kabata, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

About elderly hip fractures, there was no significant increase in transfusions, complications, and 1-year mortality rates with or without antiplatelet/anticoagulants. So, early surgery is recommended.

Poster No. P0476
Short-Term Complications in Geriatric Ankle Fractures Using a Protocolized Approach to Surgical Treatment
Gerard Chang, MD, Philadelphia, PA
Tyler Henry, BS, Philadelphia, PA
James C. Krieg, MD, Philadelphia, PA

Acceptable outcomes can be reliably obtained when following a protocolized surgical approach to geriatric ankle fracture management.

Poster No. P0477
Randomized Controlled Trials Evaluating Geriatric Hip Fracture Patients in the United States are Rare and Underpowered: A Systematic Review
Sara Weintraub, BA, Philadelphia, PA
Tyler R. Morris, MD, Cleveland, OH
Jaimo Ahn, MD, PhD, Philadelphia, PA
Joseph Bernstein, MD, Haverford, PA

A systematic review of all RCTs involving geriatric hip fracture patients was performed. We found that there was a relative shortage as well as small sample size in trials originating from the US.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.

Poster No. P0478
The Echocardiogram: A Scapegoat for Surgical Delay for Hip Fracture Patients
Angelica Pinninti, BS, Cheltenham, PA
Meera N. Gonzalez, MD, Philadelphia, PA
Rachel Rubin, Philadelphia, PA
Frederick V. Ramsey, PhD, Philadelphia, PA
Christopher L. Haydel, MD, Aston, PA

ACC/AHA guideline adherence in geriatric hip fracture evaluation will reduce perioperative echocardiogram orders, may decrease time to surgery, and is unlikely to alter intraoperative management.

Poster No. P0479
Preoperative and Perioperative Fascia Iliacus Blocks in Geriatric Hip Fracture Patients are Associated with Lower Rates of Discharge to Skilled Nursing Facilities
Landon S. Polakof, MD, Los Angeles, CA
John Garlich, MD, Los Angeles, CA
Stephen Stephan, MD, West Hollywood, CA
Christopher Johnson, MD, Los Angeles, CA
Ali Noorzaei, MD, Los Angeles, CA
Eyetan Debbi, MD, PhD, Los Angeles, CA
Dheeraj Yalamanchili, MD, Los Angeles, CA
Carol Lin, MD, MA, Los Angeles, CA
Milton T. Little, MD, Los Angeles, CA

This prospectively-collected study showed decreased rate of discharge to skilled nursing facilities in hip fracture patients treated with fascia iliaca (FI) blocks compared to standard analgesia.

Poster No. P0480
Management of Lower Extremity Long Bone Fractures Secondary to Ballistic Injury
Ali Azad, Los Angeles, CA
Robert E. Weller, Los Angeles, CA
Brock Foster, BS, MD, Pasadena, CA
Geoffrey Marecek, MD, Los Angeles, CA

Infection following medullary fixation of lower extremity diaphyseal ballistic fractures is uncommon with no difference in infection or union rates whether or not formal debridement was performed.

Poster No. P0481
Radiographic Risk Factors for Predicting Failure of Geriatric Intertrochanteric Fracture Treatment with a Cephalomedullary Nail
Kuei Hsiang Hsu, Taipei, Taiwan
Chun-Hung Chang, Taipei, Taiwan
Yu-ping Su, MD, Taipei City, Taiwan

An increase in dPG is highly associated with failure and indicates varus change of proximal fragment or lateralization of distal fragment.

Poster No. P0482
The Effect of Continuous Perioperative Antiplatelet Medication on Outcomes after Cephalomedullary Nailing in Elderly Patients with Proximal Femur Fracture
Je Hyun Yoo, MD, PhD, Anyang, Republic of Korea
Dong Hun Suh, Ansan-Si, Republic of Korea
Suchyun Kweon, Iksan, Republic of Korea
Sang Min Kim, Seoul, Republic of Korea
Kyung-Jae Lee, MD, Daegu, Republic of Korea

CMN in elderly patients with proximal femoral fracture receiving antiplatelet therapy prior to admission can be performed without discontinuing antiplatelets and surgical delay as early and safely as in patients who are not on antiplatelet medication.
Jegathesan T, MD, Singapore, Singapore
Ernest Kwok, MBBS, FRCS (Ortho), Singapore, Singapore
IT fractures have evolved into more complex fractures over the past ten years. This is due to an aging population, more severe osteoporosis, as well as the development of osteoporosis at an earlier age.

Influence of Inter-Hospital Transfer on Complication Rates after Hip Fractures
Andrew S. Bi, BS, Chicago, IL
Ryan E. Harold, MD, Chicago, IL
Krish Suresh, Chicago, IL
Sameer K. Singh, BA, Chicago, IL
Matthew D. Beal, MD, Elmhurst, IL
David W. Manning, MD, Chicago, IL
A statistical analysis using the ACS-NSQIP database to examine the effect of patient transfer status on the complication rates after procedures for fractures of the proximal lower extremity.

Comparison of Treatment Indices Associated with the Correction and Lengthening of Deformities along Various Lower Limb Frontal Plane Directions
Tomo Hamada, Kanazawa, Japan
Hidenori Matsubara, MD, Kanazawa, Japan
Yasuhiro Yoshida, Kanazawa, Japan
Shuhei Ugaji, PhD, Kanazawa City, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
The Taylor spatial frame (TSF) provides high precision in the dimensional correction of some lower limb deformities. Delayed osteogenesis in the lower limb is influenced by a patient’s age, type of deformity, correction method, number and type of osteotomy.

Assessment of 30-Day Mortality and Complication Rates Associated with Extended Deep Vein Thrombosis Prophylaxis Following Hip Fracture Surgery
Wesley M. Durand, BS, Providence, RI
Avi Goodman, MD, Providence, RI
Joseph Johnson, MD, Providence, RI
Alan H. Daniels, MD, Providence, RI
This study found that hip fracture surgery patients prescribed ≥28 days of postoperative DVT prophylaxis lower odds of death, AKI, and stroke/CVA, as compared to patients prescribed <28 days.

Synovial Fluid Leukocyte Cell Count Before Versus After Administration of Antibiotics in Patients with Septic Arthritis of a Native Joint
Benjamin Feibel, MD, Shreveport, LA
Patrick A. Massey, MD, Shreveport, LA
R. S. Barton, MD, Shreveport, LA
Hannah Thomson, BA, Shreveport, LA
Andrew Watkins, BS, Shreveport, LA
Septic arthritis presents often after antibiotics have been given. Our study compares lab values in groups that did and did not receive antibiotics in joint fluid aspiration.

Limiting Exothermic Reactions Improves Efficacy of Vancomycin Impregnated Cement
Matthew Caid, DO, Royal Oak, MI
David Prieskorn, DO, Novi, MI
Elizabeth M. Darnell, Farmington Hills, MI
Daniel Prieskorn, Brighton, MI
Surgeons using Vancomycin in Polymethylmethacrylate should consider allowing it to harden in cool water to improve the antibiotic efficiency.

Bacterial DNA Screening to Determine Infection Risk in Patients with Closed Fractures Undergoing Open Reduction Internal Fixation
Brett D Crist, MD, Columbia, MO
Brian Campfield, MD, Dalton, PA
Andrew Garrone, BS, Columbia, MO
James L. Cook, DVM, PhD, Columbia, MO
Intraoperative screening of patients for bacterial DNA and microbial culture from the fracture site did not effectively determine risk of infection in closed fracture ORIF.

Patient-Reported Outcome in Surgically Treated Pelvic Ring Injuries: A Prospective Study with Five-Year Follow Up
Björn Hernefalk, Uppsala, Sweden
Tomas Borg, MD, PhD, Uppsala, Sweden
Sune Larsson, MD, PhD, Uppsala, Sweden
Patient-reported outcome in surgically treated pelvic ring injuries is evaluated in a prospective setting with five-year follow up.

Study of Morbidity and Mortality after Intramedullary Nailing of Diaphyseal Femoral Fractures in Polytrauma Patients According to Injury Severity Score
Ruben Dukan, MD, Paris, France
Veronique Molina, MD, Kremlin Bicetre, France
Charles Court, MD, Kremlin Bicetre, France
Early intramedullary nailing of femoral diaphyseal fractures is justified for polytrauma patients with ISS<25.

Do Institutional Orthopaedic Trauma Databases Provide Accurate Information?
Aman Chopra, BA, Cupertino, CA
Abigail Cortez, MD, Santa Monica, CA
Ashraf N. EI Naga, MD, Fremont, CA
Anthony Ding, MD, San Francisco, CA
Saam Morshed, MD, San Francisco, CA
The study aims to determine the capture rate of a resident-populated database in collecting fracture data and the accuracy of resident-assigned Orthopaedic Trauma Association fracture classifications.

Pre-Existing Psychiatric Illness in Orthopaedic Trauma Patients is Underappreciated and Associated with Poor Outcomes
Omar H. Atassi, MD, Houston, TX
Ashraf N. EI Naga, MD, Fremont, CA
Matthew R. Walker, MD, Indianapolis, IN
Scott A. Mitchell, MD, Houston, TX
Psychiatric illness is prevalent in the orthopaedic trauma population and is associated with poor clinic follow up, repeat emergency visits and hospitalizations, and increased complications.
Poster No. P0494
Surgical Site Infection Prevention Bundle for Hip Fracture Patients at Yale Center for Musculoskeletal Care
Vineet Tyagi, MD, New Haven, CT
Joseph B. Kahn, MD, Meriden, CT
Lee E. Rubin, MD, New Haven, CT
Anne R. Moore, DNP, New Haven, CT
Jensa Morris, MD, Guilford, CT
Mary J. O’Connor, MD, New Haven, CT
Hip fracture patients undergoing surgical stabilization at our Center benefited from a standardized SSI prevention protocol. Hip hemiarthroplasty patients benefited the most from this protocol.

Poster No. P0495
Early Postoperative Radiographs Have No Effect on Orthopaedic Trauma Patient Satisfaction
Blake J. Schultz, MD, Palo Alto, CA
Julius A. Bishop, MD, Palo Alto, CA
Andrea Finlay, PhD, East Palo Alto, CA
Kimberly Hall, MD, Redwood City, CA
Michael J. Gardner, MD, Redwood City, CA
Eliminating early post-op radiographs in routine fracture care doesn’t affect overall patient satisfaction with the clinic visit but does impact patient’s understanding of their injury and progression.

Poster No. P0496
Does Standardization of Surgical Preparation Decrease Infection Rate in Closed Fracture Open Reduction Internal Fixation?
Brett D Crist, MD, Columbia, MO
Conor A. Smith, BS, Columbia, MO
Matthew J. Smith, MD, Columbia, MO
Standardization of surgical prep in the setting of ORIF of closed fractures significantly decreased the risk of postoperative infection requiring operative debridement.

Poster No. P0497
Bedside Management of Pistol Projectile Wounds: The Effects of Positive Pressure Irrigation on Contaminant
Alexander Colen, DO, Farmington Hills, MI
Bedside management of pistol projectile wounds: the effects of positive pressure irrigation on contaminant.

Poster No. P0498
Pedical Poster Tibial Artery Perforator Cutaneous Flap for Coverage of Posttraumatic Soft Tissue Defects over the Medial Side of the Ankle
Mohamed A. Quolquela, MD, PhD, Tanta, Egypt
Pedicle flap based on the lowermost perforator of the posterior tibial artery is a relatively easy and safe procedure to cover a soft tissue defect over the medial side of the ankle.

Poster No. P0499
Malnutrition Increases the 30-Day Postoperative Complications after Proximal Humerus Fracture Surgical Fixation
Frank S. Cautela, BS, Staten Island, NY
Marine Coste, BA, Brooklyn, NY
George A. Beyer, BA, MS, Brooklyn, NY
Anton Khlopas, MD, Elmwood Park, IL
Jennifer Kurowicki, MD, Jersey City, NJ
Andrew J. Hayden, MD, Brooklyn, NY
Robert Pivec, MD, Brooklyn, NY
Emmanuel Illicic, FRCSC, MD, Brooklyn, NY
Jared M. Newman, MD, Brooklyn, NY
Proximal humerus fracture patients who are malnourished are at a greater risk of postoperative complications and an increased likelihood of being discharged to a facility other than home.

Poster No. P0500
Opioid Use Predicts Higher Rates of Nonunion After Proximal Humerus Fractures
Jonathan C. Levy, MD, Fort Lauderdale, FL
Derek Berglund, MD, Fort Lauderdale, FL
Rushabh Vakharia, MD, Fort Lauderdale, FL
Christopher Wang, DO, Fort Lauderdale, FL
Dragomir Mijic, DO, Madison Heights, MI
Proximal humerus fracture nonunions are more common in patients with opioid dependence/abuse.
Two Poster Sessions offer twice as many presentations.
Discover new advances and observe more than 1,000 visual presentations of the latest medical, clinical, or scientific orthopaedic research.

Session I: Tuesday – Wednesday
Session II: Thursday – Saturday

Poster No. P0501
Neuraxial Anesthesia Techniques and Postoperative Outcomes among Hip and Knee Arthroplasty Patients: Is Spinal Anesthesia the Best Option?
Lazaros A. Poultides, MD, MSc, New York, NY
Sarah M. Weinstein, BA, New York, NY
Lila R. Baaklini, MD, New York, NY
Jaibin Liu, MD, PhD, New York, NY
Crispiana Cozowicz, MD, New York, NY
Jashvant Poeran, MD, PhD, New York, NY
Jawad N. Saleh, ACNP-BC, ATC, Brooklyn, NY
Stavros G. Memtsoudis, MD, PhD, New York, NY

We demonstrate that spinal anesthesia is associated with the most favorable outcomes profile compared to other subtypes of neuraxial anesthesia in patients undergoing total hip and knee arthroplasty.

Poster No. P0502
No Difference of Periarticular Multimodal Drug Injections With and Without Liposomal Bupivacaine in Total Hip Arthroplasty in Prospective, Randomized Clinical Trial
Joseph M. Bowen, MD, Post Falls, ID
David L. Wiest, MD, Fargo, ND
Sandra Albritton, RN, Coeur D Alene, ID
Robert J. Mendenhall, BSN, RN, Coeur D Alene, ID
Lucas Anderson, MD, Salt Lake City, UT

A prospective, randomized clinical trial no difference comparing periarticular multimodal drug injections with and without liposomal bupivacaine in total hip arthroplasty.

Poster No. P0503
Postoperative Delirium after Hip Fracture Repair: Modifiable Risk Factors and the Role of Age
Jashvant Poeran, MD, PhD, New York, NY
Crispiana Cozowicz, MD, New York, NY
Nicole Zubizarreta, MPH, New York, NY
Madhu Mazumdar, PhD, New York, NY
Stavros G. Memtsoudis, MD, PhD, New York, NY

In hip fracture surgery long acting benzodiazepines and gabapentinoids showed increased odds for postoperative delirium while in those aged <80 more opioids (better pain control) showed decreased odds.

Poster No. P0504
Risk Adjustment is Necessary in Value-Based Outcomes Models for Infected Total Hip Arthroplasty
Anthony J. Boniello, MD, Philadelphia, PA
Alexander M. Lieber, BA, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

Patients undergoing revision THA for infection utilize more resources in a 30-day episode of care than aseptic revision THA patients. Risk adjustment may be necessary.

Poster No. P0505
Implant Sonication for the Diagnosis of Periprosthetic Joint Infection: A Meta-Analysis
Chad W. Parkes, MD, Rochester, MN
Ayoosh Pareek, MD, Rochester, MN
Robin Patel, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN

This meta-analysis of 11 level I and II studies demonstrates improved sensitivity of sonication fluid culture in comparison to periprosthetic tissue culture (77% versus 62%) in the diagnosis of PJI.

Poster No. P0506
Polymyxin and Bacitracin in the Irrigation Solution: There is no Role for this Practice
Karan Goswami, MD, Philadelphia, PA
Jeongeun Cho, Philadelphia, PA
Jorge Manrique, MD, Bogota, Colombia
Timothy Tan, MD, Philadelphia, PA
Carol Oltz, PhD, Philadelphia, PA
Carlos A. Higuera Rueda, MD, Weston, FL
Craig J. Della Valle, MD, Chicago, IL
Javad Parviz, MD, FRCS, Philadelphia, PA

This study compared the antimicrobial efficacy and cytotoxicity of irrigation solution containing polymyxin-bacitracin versus other commonly used irrigation solutions.

Poster No. P0507
Do Trabecular Metal Acetabular Components Reduce the Risk of Rerevision Following Revision Total Hip Arthroplasty Performed for Periprosthetic Joint Infection? An Analysis from the National Joint Registry for England and Wales
Gulraj Matharu, MBCHB, Worcestershire, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
David W. Murray, MD, Oxford, United Kingdom
Heman G. Pandit, FRCS, Oxford, United Kingdom

In total hip arthroplasties revised for periprosthetic joint infection, trabecular metal (TM) coated acetabular components did not reduce the subsequent risk of infection compared to non-TM implants.

Poster No. P0508
The Journey of a Culture: From Operating Room to Final Report
Kier Blevins, BA, Conestoga, PA
Karan Goswami, MD, Philadelphia, PA
Javad Parviz, MD, FRCS, Philadelphia, PA

The purpose of this descriptive study is to inform the orthopaedic community of the high variability in the timing of routine processing of cultures – from sampling in the OR to reporting.

Poster No. P0509
Povidone-Iodine Lavage to Prevent Infection after Revision Hip and Knee Arthroplasties: Analysis of 2,884 Cases
Adam Hart, MD, Montreal, QC, Canada
Nicholas Hernandez, MD, Rochester, MN
Matthew P. Abdel, MD, Rochester, MN
Tad M. Mabry, MD, Rochester, MN
Arlen D. Hanssen, MD, Rochester, MN
Kevin I. Perry, MD, Rochester, MN

In nearly 3,000 revision THAs and TKAs at a single center, dilute povidone-iodine wound irrigation demonstrated no benefit in reducing reoperation for PJI.
Poster No. P0510
Mid-Term Survivorship and Outcomes of Two-Stage Revision for Infected Total Hip Arthroplasty

John Esposito, MD, Mississauga, ON, Canada
Richard W. McCalden, MD, London, ON, Canada
James Howard, MD, London, ON, Canada
Douglas Naudié, MD, FRCCS, London, ON, Canada
Brent Lanting, MD, London, ON, Canada
Steven J. MacDonald, MD, London, ON, Canada
Edward Vasanhelyi, MD, MSc, London, ON, Canada

At mid-term follow up there is an 89.4% success rate in eradication of periprosthetic joint infection following two-stage revision THA.

Poster No. P0511
Yttrium-90: A Novel Treatment for Biofilm and Prosthetic Infections

Joseph Kavalos, MD, Durham, NC
David Kerr, BA, Durham, NC
Alexander L. Lazarides, MD, Durham, NC
Sneha R. Rao, BS, Durham, NC
Will Eward, DVM, MD, Durham, NC

We assess the potential for Yttrium-90 to be utilized as a novel treatment for biofilm infected prosthetic infections.

Poster No. P0512
Implant Stability and Migration in an Antibiotic Coated Cementless Primary Total Hip Arthroplasty: A Randomized Controlled Trial

Ben Mwwaura, FRCS (Ortho), Oswestry, United Kingdom
Sudeer Karlakki, FRCS (Ortho), MBBS, Oswestry, United Kingdom
John-Paul Whittaker, MB, ChB, Shropshire, United Kingdom
Niall Graham, FRCS, FRCS (Ortho), Wrexham, United Kingdom
Patrick Gregson, FRCS, FRCS (Ortho), Shropshire, United Kingdom
Rohit Dhawan, MBBS, MRCS, Oswestry, United Kingdom
J. M. Wilkinson, MB, ChB, Sheffield, United Kingdom

Antibiotic coating of cementless hip arthroplasty components can prevent infection without compromising femoral or acetabular component stability or functional outcomes.

Poster No. P0513
Total Hip Arthroplasty after Prior Acetabular Fracture: Infection Is Around the Corner

Arash Aalirezaie, MD, Philadelphia, PA
Kier Blewins, BA, Conestoga, PA
Jorge Manrique, MD, Bogota, Colombia
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Camilo Restrepo, MD, Philadelphia, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

Conversion THA after acetabular fracture has significantly higher rates of PJI and less revision free survival rate.

Poster No. P0514
Are One-Stage Revisions as Successful as Two-Stage Revisions in Eradicating Periprosthetic Joint Infections after Total Hip Arthroplasty and Total Knee Arthroplasty?

Sean A. Sutphen, DO, Dublin, OH
Chelsea Koch, BS, New York, NY
Idelle Vaynberg, New York, NY
Yu-Fen Chiu, MS, New York, NY
Andy Miller, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Michael B. Cross, MD, New York, NY

Our data provides support that a one-stage revision may be an appropriate alternative to a two-stage revision for the treatment of PJI.

Poster No. P0515
Diagnosing Periprosthetic Joint Infection: An Independent, Single-Center Assessment of the Alpha-Defensin Laboratory Test

Marina Diament, Middlesbrough, United Kingdom
Ali Raza, MBBS, MS, Darlington, United Kingdom
Igor Kubelka, MD, Middlesbrough, United Kingdom
Paul Baker, MB, ChB, Stockton-on-Tees, United Kingdom
James Webb, MBBS, FRCS (Ortho), Yorkshire, United Kingdom
Andrew Port, MD, Middlesbrough, United Kingdom
Simon Jameson, Stockton-on-Tees, United Kingdom

The efficacy of the alpha-defensin laboratory test was examined and compared with other established modalities in the diagnostic workup of real world arthroplasty patients.

Poster No. P0516
Antibiotic-Loaded Calcium Sulfate Beads Do Not Improve the Outcome of Debridement and Retention of Implants in Acute Prosthetic Joint Infection

Christopher W. Jones, FRACS, MBBS, Sydney, Australia
Alliana A. Nocon, MPH, New York, NY
Nicolas A. Selemom, BA, New York, NY
Michael Henry, MD, New York, NY
Thomas P. Sculco, MD, New York, NY
Seth A. Jerabek, MD, New York, NY
David J. Mayman, MD, New York, NY
Peter K. Sculco, MD, New York, NY

Antibiotic-loaded calcium sulfate beads do not improve the outcome of debridement and retention of implants (DAIR) in acute prosthetic joint infection.

Poster No. P0517
Single-Stage versus Two-Stage Revision for Prosthetic Joint Infection - Three-Year Results from a Single Center

Luke H. Granger, BA, MBCHB, Colney Heath, United Kingdom
Nemandra A. Sandford, MRCS, Kent, United Kingdom

Single versus two-stage revision for prosthetic joint infection – three-year results from a single center.

Poster No. P0518
Dare to DAIR when BMI is Greater than Forty? Outcomes of Debridement, Antibiotics, and Implant Retention in the Severely Obese

Brian T. Nickell, MD, New York, NY
Alliana A. Nocon, MPH, New York, NY
Celeste Russell, MPH, New York, NY
Geoffrey H. Westrich, MD, New York, NY
Andy Miller, MD, New York, NY

Failure of DAIR in morbidly obese patients is staggeringly high regardless of organism both at 90 days and long term. Low threshold for explant may improve eradication and cost savings.

Poster No. P0519
Efficacy of Intraoperative Prophylactic Techniques for Prevention of Periprosthetic Joint Infection: Superiority of Betadine against Methicillin Resistant Staphylococcus Aureus

Kyle Cichos, BS, Birmingham, AL
Rachel Andrews, BS, Birmingham, AL
Whitney T. Narmore, BS, Birmingham, AL
Frank Wolschendorf, PhD, Birmingham, AL
Elie S. Ghanem, MD, Birmingham, AL

Clinically, this study suggests that prophylactic betadine is effective immediately against MRSA in the wound, as long as it comes into direct contact with the MRSA, and not dependent on exposure time.
**Poster No. P0520**
Intrawound Vancomycin in Primary Hip and Knee Arthroplasty: A Safe and Cost-Effective Means to Decrease Early Periprosthetic Joint Infection  
**Nick N. Patel, MD, Atlanta, GA**  
George N. Guild, MD, Atlanta, GA  
Arun R. Kumar, MD, Johns Creek, GA  

Findings from this investigation suggest intrawound vancomycin may be a cost-effective, safe, and efficacious means to reduce PJI in primary total hip and knee arthroplasty.

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**Poster No. P0521**
Total Hip Arthroplasty in Human Immunodeficiency Virus-Positive Patients – Up to a 14 Year Follow Up  
**David Novikov, BS, Brooklyn, NY**  
Alfshin Anoushiravani, MD, New York, NY  
Kevin Chen, BS, MA, New York, NY  
Theodore S. Wolfson, MD, New York, NY  
Nimrod Snir, MD, Zofit, Israel  
Ran Schwarzkopf, MD, New York, NY  

HIV-positive patients may be at an increased risk for aseptic complications and revision surgery following primary total hip arthroplasty.

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**Poster No. P0522**
Selective Decolonization Does Not Lower Periprosthetic Joint Infection Risk in Primary Hip and Knee Arthroplasty  
**Ashton Goldman, MD, Rochester, MN**  
Kapil Mehrotra, MD, Rochester, MN  
Kevin I. Perry, MD, Rochester, MN  
Tad M. Mabry, MD, Rochester, MN  
Michael J. Taunton, MD, Rochester, MN  
Elie Berbari, MD, Rochester, MN  
Daniel J. Berry, MD, Rochester, MN  
Matthew P. Abdel, MD, Rochester, MN  

In a review of over 7,000 primary THAs and TKAs, selective decolonization based off screening results did not lower PJI rates, including those caused by S. aureus.

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**Poster No. P0523**
Sterile Surgical Helmet Systems: What is the Safest Way to Use them While Scrubbing?  
**Shehzada A. Khan, MBCHB, MRCSED, Middlesex, United Kingdom**  
Thomas S. Moores, BSc, MBChB, Shropshire, United Kingdom  
Benjamin D. Chatterton, MBBS, MSc, Shrewsbury, United Kingdom  
Simon Lewthwaite, Shropshire, United Kingdom  

A novel study to show the safest way to use sterile surgical helmet systems to minimize the risk of infection.

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**Poster No. P0524**
Antibiotic-Impregnated Calcium Sulfate Beads: A Cost-Effective Adjunct to Infected Revision Total Hip Arthroplasty  
**Nicole E. George, DO, Towson, MD**  
Chukwuweike U. Gwan, MD, Greenbelt, MD  
Jennifer I. Etcheson, MD, MS, Baltimore, MD  
Iciar M. Davila Castrodad, MD, Baltimore, MD  
Nequesha Mohamed, MD, Ajax, ON, Canada  
John Tarazi, MD, El Sobrante, CA  
Randle W. Ramsey, DO, Drexel Hill, PA  
James Nace, DO, PT, Cockeysville, MD  
Ronald E. Delanois, MD, Baltimore, MD  

The use of antibiotic-impregnated calcium sulfate beads in infected revision THA is cost-effective, decreasing reoperation rates, number of subsequent washouts, and reinfection rates.

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**Poster No. P0525**
Long-Term Hip Survival and Factors Influencing Patient-Reported Outcomes after Transtrochanteric Anterior Rotational Osteotomy for Osteonecrosis of the Femoral Head: A Minimum 10-Year Follow Up Case Series  
**Koichiro Kawano, Fukuoka, Japan**  
Goro Motomura, MD, Fukuoka, Japan  
Satoshi Ikemura, MD, Fukuoka, Japan  
Yusuke Kubo, MD, Fukuoka, Japan  
Jun-Ichi Fukushima, Fukuoka, Japan  
Satoshi Hamai, MD, PhD, Fukuoka, Japan  
Masanori Fuji, MD, PhD, Fukuoka, Japan  
Yasuharu Nakashima, MD, Fukuoka, Japan  

ARO could effectively preserve hip joints with postcollapse ONFH, while the presence of osteoarthritic change can lead to lower satisfaction even in patients with long-term hip survival after ARO.

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**Poster No. P0526**
Assessing Exposure to Metallic Wear and Corrosion Products in Peri-Implant Bone/Bone-Marrow by Synchrotron-Based µ-XRF and Nano-XRF Mapping  
**Anastasia Rakow, MD, Berlin, Germany**  
Bernhard Hesse, Grenoble, France  
Dorit Jacobi, Berlin, Germany  
Melanie Ort, MSc, Berlin, Germany  
Simon Reinek, Berlin, Germany  
Carsten Perka, MD, Berlin, Germany  
Georg Duda, Dr Ing, Berlin, Germany  
Sven Geissler, MSc, PhD, Berlin, Germany  
Janosch Schoon, Berlin, Germany  

Metal release from implants leads to multi-elemental particle exposure in peri-implant bone and BM. XRF mapping of peri-implant samples is an expedient tool for risk-benefit evaluation in arthroplasty.

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**Poster No. P0527**
Evaluation of the Effectiveness of Supplemental Hydroxyapatite Coatings to an Additive Manufactured Porous Ingrowth Biomaterial: A Canine Model  
**Philip J. Chuang, PhD, Mahwah, NJ**  
Chau G. Ngo, MS, Mahwah, NJ  
Carlos Aponte, Mahwah, NJ  
Lin Song, PhD, Mahwah, NJ  
Stryker Orthopaedics, Mahwah, NJ  
Michael Tanzer, MD, Montreal, QC, Canada  

This study evaluates the biological fixation of novel additive manufacturing porous implants with different hydroxyapatite coatings in a canine transarticular model.

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**Poster No. P0528**
Is Combined Surgical Hip Dislocation and Proximal Femoral Osteotomy a Safe Procedure for Reconstruction of Severe Proximal Femoral Deformities?  
**Mitchel Obey, MD, Saint Louis, MO**  
Perry L. Schoenecker, MD, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO  

We report major complications in 7.7% of patients undergoing this combined procedure, demonstrating an acceptable complication profile for combined SHD/PFO in treating challenging femoral deformities.

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**Poster No. P0529**
Pain Catastrophizing, Anxiety, and Depression in Hip Pathology  
**Savannah N. Hampton, BS, Dallas, TX**  
Paul Nakonezny, PhD, Dallas, TX  
Joel E. Wells, MD, MPH, Dallas, TX  

Both younger and older orthopaedic patients exhibit PC, anxiety, and depression. Identifying and addressing these factors in all patients may be beneficial to reduce potential negative outcomes.
Poster No. P0530
The Safer Anterior Acetabulum Area for the Femoral Nerve Considering Proximity: Cadaveric Anatomical Study
Kensuke Yoshino, MD, Chiba, Japan
Junichi Nakamura, MD, Chiba, Japan
Shigeo Hagiwara, MD, PhD, Chiba, Japan
Yuya Kawarai, MD, Chiba, Japan
Masahiko Sugano, MD, Chiba, Japan
Kento Nawata, MD, Chiba, Japan
Kenta Konno, MD, Chiba, Japan
Satoshi Yoh, Chiba City, Japan
Yasushi Wako, Chiba City, Japan
Michiaki Miura, Chiba, Japan
Seiji Ohtori, MD, PhD, Chiba, Japan
Department of Orthopaedic Surgery, Graduated School of Medicine, Chiba University

We demonstrate safer areas in the anterior acetabulum by measuring the distance between the femoral nerve and the acetabular margin.

Poster No. P0531
Long-Term Outcome of Metal-on-Metal Total Hip Arthroplasty Using a 36-mm Diameter Femoral Head
C. A. Engh, MD, Alexandria, VA
Nicole Dayton, Alexandria, VA
Lindsey Sawczuk, BA, Alexandria, VA
James F. McDonald, BS, Alexandria, VA
Robert Hopper, PhD, Alexandria, VA
Kevin B. Fricka, MD, Alexandria, VA

Clinical symptoms, imaging studies, and metal levels can help identify patients with metal-on-metal bearings at risk for adverse tissue reactions at long-term follow up.

Poster No. P0532
Acetabular Screw Fixation: A False Sense of Security!
Dhiren S. Sheth, MD, Irvine, CA
Guy Cafri, PhD, San Diego, CA
Liz Paxton, MA, Rcho Santa Fe, CA
Robert S. Namba, MD, Corona Del Mar, CA

After propensity score matching, there was increased risk of acetabular shell revision with screw fixation (11,684 cases) compared to without screw (13,038 cases), HR=2.14 (1.04, 4.41) p=0.04 in primary.

Poster No. P0533
Does a July Effect Exist for Fellowship Training in Total Hip and Knee Arthroplasty?
William G. Hamilton, MD, Alexandria, VA
Henry Ho, MSc, Alexandria, VA
Nancy L. Parks, Alexandria, VA
Craig J. McAsey, MD, Arlington, VA
Robert Hopper, PhD, Alexandria, VA

Among 15,650 primary hip and knee arthroplasties performed from 2006-2016, 90-day complication rates were not associated with fellow experience level or the specific fellow who assisted with surgery.

Poster No. P0534
Lumbar Fusion After Total Hip Arthroplasty: A Potentially Unstable Marriage
Connor A. King, MD, Chicago, IL
David C. Landy, MD, Chicago, IL
Hue H. Luu, MD, Chicago, IL
John M. Martell, MD, Chicago, IL
Lewis L. Shi, MD, Chicago, IL
Michael J. Lee, MD, Chicago, IL

Lumbar fusion following total hip arthroplasty results in a sustained increased rate of dislocation over time persisting at least 10 years postoperatively.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0540
Risk Factors for Readmission within Thirty Days Following Revision Total Hip Arthroplasty
Sameer Naranje, MS, MBBS, Birmingham, AL
Colin Cantrell, BS, Madison, AL
Eva Lehtonen, BS, Birmingham, AL
Harshadkumar A. Patel, MBBS, MD, Fultondale, AL
Henry Debell, BS, Birmingham, AL
Katherine Busdemeier, BS, Birmingham, AL
Ashish Shah, MD, Birmingham, AL

Understanding risk factors associated with readmission allows for the implementation of interventions aimed at minimizing risk and reducing 30-day readmission rates following revision THA.

Poster No. P0541
Accuracies of Computed Tomography-Based and Image-Free Navigations for Acetabular Cup Insertion in Total Hip Arthroplasty in the Lateral Position
Masahiro Hasegawa, MD, Mie, Japan
Shine Tone, Tsu, Japan
Yohei Naito, Tsu, Japan
Hinoki Wakabayashi, Tsu, Japan
Akihiro Sudo, MD, Tsu City, Japan

Accuracies of cup positioning showed no differences between CT-based and image-free navigation when bilateral ASIS points were digitized in 32 hips. Image-free navigation could be useful even for hip dysplasia.

Poster No. P0542
Early Osteoarthritic Changes in Cartilage from Cam Deformity in Patients with Symptomatic Femoro-Acetabular Impingement: Implications in Hip Osteoarthritis
Masahiko Haneda, MD, PhD, Saint Louis, MO
Muhammad Farooq Rai, PhD, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO
Cecilia Pascual-Garrido, MD, Saint Louis, MO

Cartilage samples from the head-neck impingement area have inflammation and high expression of catabolic proteins that are known to be involved in the genesis of OA.

Poster No. P0543
Does Socioeconomic Status Affect Patient Reported Outcome Measures in Total Hip Arthroplasty?
Sean J. Matuszak, BA, Boston, MA
Vincent Galea, BA, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
James W. Connelly, BA, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
James I. Huddleston, MD, Cambridge, MA
Henrik Malchau, MD, Cambridge, MA

We found that low socioeconomic status was correlated with inferior preoperative PROMs and inferior postoperative PROMs, but not the magnitude of change in PROMs after surgery.

Poster No. P0544
Risk Factors for Readmission within Thirty Days Following Revision Total Hip Arthroplasty
Sameer Naranje, MS, MBBS, Birmingham, AL
Colin Cantrell, BS, Madison, AL
Eva Lehtonen, BS, Birmingham, AL
Harshadkumar A. Patel, MBBS, MD, Fultondale, AL
Henry Debell, BS, Birmingham, AL
Katherine Busdemeier, BS, Birmingham, AL
Ashish Shah, MD, Birmingham, AL

Understanding risk factors associated with readmission allows for the implementation of interventions aimed at minimizing risk and reducing 30-day readmission rates following revision THA.

Poster No. P0545
Accuracies of Computed Tomography-Based and Image-Free Navigations for Acetabular Cup Insertion in Total Hip Arthroplasty in the Lateral Position
Masahiro Hasegawa, MD, Mie, Japan
Shine Tone, Tsu, Japan
Yohei Naito, Tsu, Japan
Hinoki Wakabayashi, Tsu, Japan
Akihiro Sudo, MD, Tsu City, Japan

Accuracies of cup positioning showed no differences between CT-based and image-free navigation when bilateral ASIS points were digitized in 32 hips. Image-free navigation could be useful even for hip dysplasia.

Poster No. P0546
Early Osteoarthritic Changes in Cartilage from Cam Deformity in Patients with Symptomatic Femoro-Acetabular Impingement: Implications in Hip Osteoarthritis
Masahiko Haneda, MD, PhD, Saint Louis, MO
Muhammad Farooq Rai, PhD, Saint Louis, MO
John C. Clohisy, MD, Saint Louis, MO
Cecilia Pascual-Garrido, MD, Saint Louis, MO

Cartilage samples from the head-neck impingement area have inflammation and high expression of catabolic proteins that are known to be involved in the genesis of OA.

Poster No. P0547
Does Socioeconomic Status Affect Patient Reported Outcome Measures in Total Hip Arthroplasty?
Sean J. Matuszak, BA, Boston, MA
Vincent Galea, BA, Boston, MA
Pakdee Rojanasopondist, BA, Cambridge, MA
James W. Connelly, BA, Boston, MA
Charles R. Bragdon, PhD, Boston, MA
James I. Huddleston, MD, Cambridge, MA
Henrik Malchau, MD, Cambridge, MA

We found that low socioeconomic status was correlated with inferior preoperative PROMs and inferior postoperative PROMs, but not the magnitude of change in PROMs after surgery.

Poster No. P0548
Does Surgeon Attire Affect Patient Satisfaction: A Multicenter, Nationwide Study
C. L. Barnes, MD, Little Rock, AR
Kevin L. Garvin, MD, Omaha, NE
Andrew I. Spitzer, MD, Beverly Hills, CA
Adam A. Sassoon, MD, Seattle, WA
Brian M. Curtin, MD, Charlotte, NC
Paul J. Duwelius, MD, Portland, OR
Jeffrey K. Lange, MD, Boston, MA
Chris Grayson, MD, Palm Harbor, FL
Bradford S. Waddell, MD, Greenwich, CT

In the modern era where satisfaction can affect reimbursement, we demonstrate that even physician attire can play a role in patient satisfaction and should not be overlooked.

Poster No. P0549
Are Preoperative Patient Reported Outcome Measures (PROMs) in Hip and Knee Replacement Consistent Over Time? A Prospective Cohort Analysis
David Bodansky, MBCHB, Manchester, United Kingdom
Graeme Wilson, Liverpool, United Kingdom
Gunasekaran Kumar, FRCS (Ortho), FRCS, Prenton, United Kingdom

Although designed to be valid for four weeks (OHS, OKS) and only for day of administration (EuroQoL VAS), preoperative PROMs undertaken up to 3 months in advance are still reliable.

Poster No. P0550
Certificate-of-Need Programs and Total Hip Arthroplasty
Aaron Casp, MD, Charlottesville, VA
James A. Browne, MD, Charlottesville, VA
Jourdan M. Cancienne, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA

An evaluation of the effect that certificate-of-need regulations have had on utilization and complication rates in total hip arthroplasty.

Poster No. P0551
When Can I Drive? A Predictive Model to Predict Return to Driving following Total Hip Arthroplasty
Timothy Tan, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Karan Goswami, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Toliver Freeman, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

This prospective study determined specific patient predictors and created an individualized model to estimate median return to driving following THA.

Poster No. P0552
Poor Prognostic Ability of the Alpha-Defensin Test at Reimplantation of a Two-Stage Revision for Failure at One Year
Linsen T. Samuel, MBA, MD, Floral Park, NY
Assem Sultan, MD, Cleveland, OH
Matthew Kheir, BS, Philadelphia, PA
Jesus M. Villa, MD, Weston, FL
Preetesh D. Patel, MD, Weston, FL
Javad Parvizi, MD, FRCS, Philadelphia, PA
Carlos A. Higuera Rueda, MD, Weston, FL

AD-1 and the MSIS criteria demonstrated weak predictive ability for failure criteria at 1 year.
Poster No. P0549

Review and Critical Appraisal of Studies Published in Orthopaedic Surgery using Large Administrative Databases

Aidin Eslam Pour, MD, Ann Arbor, MI
Joel J. Gagnier, PhD, Ann Arbor, MI

Published reports in the top orthopaedic journals of clinical research using data from administrative databases generally have poor methods and fail to report a large amount of key information.

Poster No. P0550

Posterior Hip Precautions Do Not Impact Early Recovery at Total Hip Arthroplasty: A Multicenter Randomized Controlled Study

Matthew J. Dietz, MD, Morgantown, WV
Adam E. Klein, MD, Morgantown, WV
Brock A. Lindsey, MD, Morgantown, WV
Stephen T. Duncan, MD, Lexington, KY
Jennifer L. Eicher, BS, Morgantown, WV
Brett R. Smith, MD, Gulf Breeze, FL
Garen D. Steele, MD, Gulf Breeze, FL

The absence of hip precautions in the postoperative period did not improve subjective outcomes. With the numbers available for the study, there was no difference in the rate of dislocation between the two groups.

Poster No. P0551

Ninety-Day Costs, Reoperations, and Readmissions for Primary Total Hip Arthroplasty Patients of Varying Body Mass Index Levels

Karthik Ponnumasy, MD, Woodstock, GA
Jacquelyn Marsh, MSc, PhD, London, ON, Canada
Richard W. McCaIden, MD, London, ON, Canada
Lyndsay Somerville, PhD, London, ON, Canada
Edward Vasarhelyi, MD, MSc, London, ON, Canada

The 90-day costs of a primary THA for morbidly-obese (BMI 40-44.9) and super-obese (BMI>45) are significantly greater than for non-obese patients, but have comparable improvements in outcome scores.

Poster No. P0552

The Presence of Cervical or Thoracic Arthrodesis is Associated with Inferior Outcome Post-Total Hip Arthroplasty

George A. Grammatopoulos, MRCS, Ottawa, ON, Canada
Wade T. Golton, BSCH, MD, Ottawa, ON, Canada
Matthew Coyle, MD, MSc, Ottawa, ON, Canada
Johanna Dobransky, MA, Ottawa, ON, Canada
Cheryl Kreviazuk, BA, Ottawa, ON, Canada
Nicole M. Harris, BS, Ottawa, ON, Canada
Philippe T. Phan, MD, Ottawa, ON, Canada
Mario Lamontagne, Ottawa, ON, Canada
Paul E. Beaule, FRCS (Ortho), MD, Ottawa, ON, Canada

The presence of cervical arthrodesis, is associated with inferior outcome and greater prevalence of instability. Myelopathy increases risk of instability.

Poster No. P0553

Opioid Use after Discharge Following Primary Total Hip Arthroplasty: How Much are We Overprescribing?

Zachary Thienlen, MD, Irvine, CA
Travis Scudday, MD, Orange, CA
Nader A. Nassif, MD, Newport Beach, CA
Jay J. Patel, MD, Irvine, CA
Steven L. Barnett, MD, Villa Park, CA
Robert S. Gorab, MD, Irvine, CA

In a prospective cohort study of primary THA patients, MME prescribed for pain management after discharge significantly exceeded MME consumed.

Poster No. P0554

Web-Based, Self-Directed Physical Therapy after Total Hip Arthroplasty is Safe and Effective for Most, but not all, Patients

Mitchell R. Klement, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Richard McEntee, Philadelphia, PA
Matthew Kheir, BS, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA

Web-based, self-directed physical therapy is safe and effective for most, but not all, patients eligible for home discharge after THA.

Poster No. P0555

B2 Periprosthetic Femoral Fractures around Previously Well-Cemented Polished Stems can Be Treated with Osteosynthesis in Low-Demand Patients

Pablo A. Siulilitel, MD, Buenos Aires, Argentina
Jose I. Oñativia, MD, Buenos Aires, Argentina
Gerardo Zanotti, Buenos Aires, Argentina
Francisco Piccaluga, MD, Buenos Aires, Argentina

Treatment of Vancouver B2 periprosthetic femoral fractures with minimally invasive osteosynthesis.

Poster No. P0556

Thirty-Day Outcomes after Bilateral Total Hip Arthroplasty in a Nationwide Cohort

Nima Eftekhar, MD, New York, NY
Benjamin Kester, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
William J. Long, MD, New York, NY
Stavros G. Memtsoudis, MD, PhD, New York, NY
Lazaros A. Poultsides, MD, MSc, New York, NY

A large review of bilateral THA that demonstrates increased rate of transfusions and deep wound infections, but similar rates of medical complications and readmissions.

Poster No. P0557

Ceramic-on-Ceramic Total Hip Arthroplasty with the 4th Generation 36mm Head: A Comparative Study with the 3rd Generation 28mm Head by Propensity Score Matching

Soong Joon Lee, MD, Seoul, Republic of Korea
Hyunwoo Lim, Seoul, Republic of Korea
Hong Suk Kwak, Seoul, Republic of Korea
Pil Whan Yoon, MD, Seoul, Republic of Korea
Kang Sup Yoon, MD, PhD, Seoul, Republic of Korea

Compared to 28mm head, the usage of the 36mm ceramic head in ceramic-on-ceramic primary THA would increase postoperative ROM and decrease early dislocation without increased rate of inguinal pain, squeaking, and ceramic fracture.

Poster No. P0558

Proximal Femoral Shape Changes the Risk of a Limb Leg Length Discrepancy after Primary Total Hip Arthroplasty

Young Wook Lim, MD, Seoul, Republic of Korea
James I. Huddleston, MD, Redwood City, CA
Stuart B. Goodman, MD, Redwood City, CA
William J. Maloney, MD, Redwood City, CA
Derek F. Amanatullah, MD, Redwood City, CA

More than 0.6 of femoral cortical index (FCI) increases the probability of clinically lengthening the limb and less than 0.5 of FCI increases the probability of clinically shortening the limb.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Patient Outcomes After Total Joint Arthroplasty: Does Surgeon Gender Matter?

Antonia F. Chen, MD, MBA, Newton, MA
James J. Purtill, MD, Philadelphia, PA
Ayesha Abdeen, MD, Boston, MA
Benjamin Zmistowski, MD, Philadelphia, PA
Talia Chapman, MD, Philadelphia, PA

Female surgeons performed fewer arthroplasties, however, after adjusting for case volume and years since medical school graduation, female surgeons had lower adjusted complication rates.

Increased focus on patients with lumbar flatback and hyperlordosis may help reduce prosthetic dislocation prevalence in total hip arthroplasty.

Poster No. P0564
Treatment for Chronic Hepatitis C Prior to Total Hip Arthroplasty Significantly Reduces Perioperative Surgical Complications

Hany S. Bedair, MD, Boston, MA
Brian M. Schurko, MD, Everett, MA
Maureen K. Dwyer, ATC, PhD, Newton, MA
David Novikov, BS, Brooklyn, NY
Afshin Anoushiravani, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY

While further investigation is warranted, strong consideration should be given to treating patients for HCV prior to elective THA.

Poster No. P0565
The Cost-Effectiveness of Dual Mobility in a Spinal Deformity Population with High-Risk of Dislocation

Ameer M. Elbuluk, MD, Los Angeles, CA
James D. Slover, MD, New York, NY
Afshin Anoushiravani, MD, New York, NY
Nima Eftekhar, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY

Under specific clinical and economic thresholds, dual-mobility cups are a cost-effective treatment strategy for this population at high-risk of dislocation.

Poster No. P0566
Failed Periacetabular Osteotomy Leads to Acetabular Defects during Subsequent Total Hip Arthroplasty

Yusuke Osawa, MD, Nagoya City, Japan
Taisuke Seki, MD, PhD, Nagoya, Japan
Yasuhiro Takegami, MD, PhD, Nagoya, Japan
Taiki Kusano, Nagoya City, Japan

Failed periacetabular osteotomy leads to acetabular defects during subsequent total hip arthroplasty. Therefore, careful consideration should be given to PAO adaptation.

Poster No. P0567
Risk Factors for Blood Transfusion after Primary Total Hip Arthroplasty

Kyle K. Kesler, MD, Iowa City, IA
Timothy Brown, MD, Iowa City, IA
John R. Martin, MD, Weddington, NC
Bryan D. Springer, MD, Charlotte, NC
Jesse E. Otero, MD, Iowa City, IA

Among THA patients, characteristics and comorbidities exist that are associated with increased likelihood of transfusion. Presence of these factors should guide hemoglobin monitoring postoperatively.
Tranexamic acid vs. epsilon-aminocaproic acid in total hip arthroplasty: a randomized controlled trial demonstrating no difference in transfusion rate or outcome in total hip arthroplasty.

Intravenous Tranexamic Acid Effectively and Safely Reduces Transfusion Rates in Revision Total Hip Arthroplasties

The use of IV TXA in revision THAs is associated with a significant reduction in transfusion rates, and a very low rate of VTEs (0.3%).

In vitro Corrosion of Sleeved Ceramic Femoral Head Implants: A Retrieval Study

Retrieval analysis of sleeved ceramic implants demonstrates minimal damage and corrosion at the titanium liner interface.

The Effect of Combined Administration of Tranexamic Acid on Blood Loss in Total Knee and Hip Arthroplasty: Aspirin is Enough

This study demonstrates that combined TXA regimen may be more effective than single TXA regimen in decreasing total blood loss, transfusion requirements, and shortening LOS following TJA.

A 30-Day Post-Discharge Multimodal Analgesic Regimen Reduces Opioid Use After Primary Total Knee Arthroplasty

This study demonstrates that combined TXA regimen may be more effective than single TXA regimen in decreasing total blood loss, transfusion requirements, and shortening LOS following TJA.

Complications Associated with the Treatment of Tribocorrosion in Patients with Metal on Polyethylene Hip Arthroplasty

Tribocorrosion is an increasingly common cause for THA revision. Femoral head and liner exchange is effective but has a higher than expected complication rate.

Venous Thrombo Emboli Prophylaxis in Patients Undergoing Total Hip Arthroplasty: Aspirin is Enough

Considering enormous potential of aspirin in reduction of symptomatic VTE and in light of very low cost of aspirin we recommend routine use of aspirin as first line drug against VTE in THA patients.

Blood Metal Levels, Leukocyte, and Cytokine Profiles in Patients with a Modular Dual Mobility Hip Prosthesis: A Prospective Cohort Study

A prospective study evaluating blood metal ion levels and circulating leukocyte profiles in MDM hip implants indicates that the system is safe and could be useful in higher risk patients.
Poster No. P0577
Anatomical Features of the Descending Genicular Artery to Facilitate Surgical Exposure for the Subvastus Approach: A Cadaveric Study
Yuya Kawarai, MD, Chiba, Japan
Junichi Nakamura, MD, Chiba, Japan
Shigeo Hagiwara, MD, PhD, Chiba, Japan
Takane Suzuki, Chiba, Japan
Masahiko Sugano, MD, Chiba, Japan
Kento Nawata, MD, Chiba, Japan
Kensuke Yoshino, MD, Chiba, Japan
Seiji Ohtori, MD, PhD, Chiba, Japan

The descending genicular artery showed several variations and was absent 11%. An oblique incision within 14 cm from the tibial tuberosity is considered a safe zone for the subvastus approach.

Poster No. P0578
Energy Expenditure During Conventional and Robotic Arm-Assisted Total Knee Arthroplasty
Kier Blevins, BA, Conestoga, PA
Jonathan Danoff, MD, Great Neck, NY
Rahul K. Goel, MD, Atlanta, GA
Carol Foltz, PhD, Philadelphia, PA
William J. Hezack, MD, Philadelphia, PA
Antonia F. Chen, MD, MBA, Newton, MA

The purpose of this study is to compare total and rate of caloric energy expenditure between conventional and robotic-arm assisted total knee arthroplasty (TKA).

Poster No. P0579
Culture Negative Total Knee Arthroplasty Periprosthetic Joint Infections Do Not Always Remain Culture Negative After Irrigation and Debridement
Beverly L. Hersh, BA, BS, Pittsburgh, PA
Jason Zlotnicki, MD, Pittsburgh, PA
Scott D. Rothenberger, PhD, Pittsburgh, PA
Alexander Kreger, Pittsburgh, PA
Neel B. Shah, MD, Pittsburgh, PA
Kenneth Urish, MD, PhD, Sewickley, PA

Culture negative periprosthetic joint infections treated with I&D often become culture positive upon failure. S. aureus is a common organism responsible for culture negative PJI.

Poster No. P0580
Pseudotumors and High Grade Aseptic Lymphocyte-Dominated Vasculitis-Associated Lesion around Total Knee Replacements: A Large-Scale Histopathologic Review
Donald S. Garbuz, MD, MHSc, Vancouver, BC, Canada
Andrew P. Kurmis, FRACS, MBBS, Vancouver, BC, Canada
Amir Herman, MD, PhD, Kryat Ono, Israel
Bassam A. Masri, MD, FRCCS, Vancouver, BC, Canada

Establish the preliminary prevalence of pseudotumor or high grade ALVAL formation seen at the revision of primary TKR and establish the correlation between histologic ALVAL grade and PROMs.

Poster No. P0581
Comparison of Anterior Stabilized and Posterior Stabilized Total Knee Arthroplasties in the Same Patients: A Prospective Randomized Study
Mansoo Kim, MD, Seoul, Republic of Korea
Sung Won Jang, MD, Seoul, Republic of Korea
In Jun Koh, MD, PhD, Seoul, Republic of Korea
Sueen Sohn, MD, Seoul, Republic of Korea
Yong In, MD, Seoul, Republic of Korea

Both AS and PS TKA groups showed similar dynamic stability under weight-bearing conditions and clinical outcomes at two years postoperatively.

Poster No. P0582
Tibiofemoral Contact Kinematics in Total Knee Replacements: A Comparison of Patient Specific and Conventional Instrumentation
Jordan Broberg, London, ON, Canada
James Howard, MD, London, ON, Canada
Edward Varsarhelyi, MD, MSc, London, ON, Canada
Xinhua Yuan, PhD, London, ON, Canada
Richard W. Mccalden, MD, London, ON, Canada
Douglas Naudie, MD, FRCS, London, ON, Canada
Matthew G. Teeter, PhD, London, ON, Canada

A randomized clinical trial comparing tibiofemoral contact kinematics, measured using radiostereometric analysis, of TKAs that implemented either patient specific or conventional instrumentation.

Poster No. P0583
Critical Evaluation of the Reference Axes for Femoral Component Rotation in Total Knee Arthroplasty: A Biomorphometric Computed Tomography-Based Study of 2,128 Femurs
Eugene S. Jang, MD, MS, New York, NY
Sally Liarno, Mahwah, NJ
Ronald Connors-Ehtiert, Mahwah, NJ
Jeffrey A. Geller, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY

Large-scale anatomic CT database study of 2,128 femurs finds that the sulcus line is the most accurate method to set rotation of the femoral component in total knee arthroplasty.

Poster No. P0584
Joint Line Elevation did Not Associate with the Mid-Flexion Laxity in Total Knee Arthroplasty
Yukihide Minoda, MD, Osaka, Japan
Suguru Nakamura, MD, Osaka, Japan
Hideki Ueyama, MD, Osaka, Japan
Hiroaki Nakamura, MD, Osaka, Japan

Joint gap kinematics was measured during the TKA. For the patients with varus osteoarthritis knee, the joint line elevation did not increase the joint gap laxity in mid-flexion.

Poster No. P0585
Femoral Component Malrotation Produces Quadriceps Weakness and Impaired Ambulatory Function following Total Knee Arthroplasty: Results of a Patient-Specific, Forward Dynamic Computer Model
John F. Nettroor, MD, Columbia, MO
Swithin Razu, MS, Columbia, MO
James A. Keeney, MD, Columbia, MO
Trent Guess, PhD, Columbia, MO

Internal malrotation of the femoral component during TKA necessitates greater quadriceps forces (especially the vastus lateralis) and greater quadriceps work to support normal ambulation.

Poster No. P0586
Effect of Preoperative Vitamin D Insufficiency on Functional Outcome after High Tibial Osteotomy
Won Chul Choi, MD, Sungnam, Republic of Korea
Seongeun Byun, Seoul, Republic of Korea

Patients with lower preoperative serum vitamin D level showed less satisfactory functional outcome until one year after HTO.
Poster No. P0587
Too Fat for Joint Replacement: The Fate of the Morbidly Obese Patient with Joint Pain
Russell A. Reeves, MD, Charleston, SC
Glenn D. Heffer, BS, Charleston, SC
Jacob C. Balmer, BS, Charleston, SC
Sarah Guess, BS, Chapin, SC
Richard D. Williams, MD, Mobile, AL
Bennett L. Haskin, BS, Charleston, SC
Vincent D. Pellegrini, MD, Charleston, SC
Jacob M. Drew, MD, Boston, MA
Harry A. Demos, MD, Charleston, SC

Increasing BMI significantly reduces the likelihood that a patient will receive arthroplasty surgery and most morbidly obese patients are unable to lose enough weight to receive arthroplasty surgery.

Poster No. P0588
Complications of Computer Navigated Total Knee Arthroplasty Compared to Conventional Instrumentation
Matthew Sloan, MD, Philadelphia, PA
Neil P. Sheth, MD, Philadelphia, PA
Gwo-Chin Lee, MD, Philadelphia, PA

Large national database study evaluating outcomes between computer navigated and conventional total knee arthroplasty. Computer navigated patients showed no significant increase in complications.

Poster No. P0589
Safety of Tranexamic Acid in Patients with Comorbidities: A National Assessment Using Claims Data from 1.7 Million Hip and Knee Arthroplasties
Jimmy J. Chan, MD, Scarsdale, NY
Jashvant Poeran, MD, PhD, New York, NY
Nicole Zubizarreta, MPH, New York, NY
Madhu Mazumdar, PhD, New York, NY
Leesa M. Galatz, MD, New York, NY
Calin S. Moucha, MD, New York, NY

Among 1.7 million hip/knee arthroplasties, tranexamic acid use was not associated with increased complications when used in patients with preexisting comorbidities.

Poster No. P0590
Tranexamic Acid as a Blood Conservation Strategy in Revision Total Knee Arthroplasty
Arianna Gianakos, DO, Jersey City, NJ
R. Sterling Haring, DO, MPH, Baltimore, MD
Bishoy Saad, BS, DO, New York, NY
Sherif Elkattawy, BS, Jersey City, NJ
Richard S. Yoon, MD, Jersey City, NJ
Frank A. Liporace, MD, Englewood Cliffs, NJ

Intravenous TXA reduced postoperative bleeding, transfusion rate, and length of hospital stay in revision TKA procedures with no increase in thromboembolic complications.

Poster No. P0591
Total Knee Arthroplasty in Hemophiliacs is Associated with Increased Complications and Costs
Samuel Rosas, MD, Winston-Salem, NC
Leonard T. Buller, MD, Miami, FL
Johannes F. Plate, MD, PhD, Durham, NC
Carlos A. Higuera Rueda, MD, Weston, FL
Wael K. Barsoum, MD, Weston, FL
Cynthia L. Emory, MBA, MD, Winston-Salem, NC

The purpose of this study was to evaluate the effects of hemophilia on TKA outcomes at the national level based on recent Medicare data.

Poster No. P0592
A Total Knee Arthroplasty Cost Analysis Based on Increasing Patient Comorbidities
Nipun Sodhi, BA, Cleveland, OH
Rushabh Vakharia, MD, Fort Lauderdale, FL
Hiba Anis, MD, Cleveland, OH
Chukwuweke U. Gwam, MD, Greenbelt, MD
Ronald E. Delanois, MD, Baltimore, MD
Steven F. Harwin, MD, New York, NY
Tsun Yee Law, MD, Fort Lauderdale, FL
Martin W. Roche, MD, Fort Lauderdale, FL
Michael A. Mont, MD, New York, NY

In order to prevent disincentives for treating sicker patients, as the process of healthcare reform continues, considerations need to be made regarding the costs and reimbursements for complex patients.

Poster No. P0593
No Increased Risk of 90-Day Complication or Readmission, as Well as Decreased Cost, with Total Joint Replacement in a Private, Community-Based Ambulatory Surgery Center
Michael P. Ast, MD, New York, NY
Destiny M. Davis, BS, Egg Harbor, NJ
Kaitlin M. Carroll, BS, New York, NY
Alvin C. Ong, MD, Linwood, NJ

Despite possible concerns, there is no increased risk of complications or readmissions when THR and TKR are performed in a community-based ASC.

Poster No. P0594
Knee Arthroplasty Patient Satisfaction and Clinical Outcomes are Better with a Medial-Stabilized Implant vs. a Posterior-Stabilized Implant with an Anatomic Surgical Technique
David F. Scott, MD, Spokane, WA
Brenna McMahill, BS, Spokane, WA

This supports the conclusion that a medially-stabilized knee, in conjunction with an anatomic alignment surgical technique, offers improved biomechanics and kinematics compared to a PS knee.

Poster No. P0595
Cementless and Cemented Total Knee Arthroplasty Utilizing Same Design Yields Similar Outcomes
Eric T. Owashi, MD, White Plains, NY
Neel Patel, MD, Valhalla, NY
Christopher P. Meatsakis, MD, Valhalla, NY
Nathanial L. Rawicki, MD, Valhalla, NY
Kyle Fink, MD, Bronxville, NY
James R. McFarlin, BA, Valhalla, NY
Michael S. Shatkin, BA, Hartsdale, NY
Steven B. Zelicof, MD, Harrison, NY

Cementless and cemented total knee arthroplasty utilizing implants of the same design yield similar outcomes.

Poster No. P0596
Ten-Year Results of a Matched Cohort Comparing Oxidized Zirconium and Cobalt-Chrome Femoral Components for Total Knee Arthroplasty
Andrew Clout, MBBS, London, ON, Canada
Lyndsay Somerville, PhD, London, ON, Canada
Douglas Naude, MD, FRCS, London, ON, Canada
Richard W. McCalder, MD, London, ON, Canada

Excellant survivorship and patient outcomes at 10 year follow up of both oxidized zirconium and cobalt-chrome femoral components in identical implant design with no clear advantage of either bearing.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0597
Clinical Evaluation of Alpha Defensin Test following Staged Treatment of Prosthetic Joint Infections
William Z. Stone, MD, Gainesville, FL
Hari K. Parvataneni, MD, Gainesville, FL
Chancellor F. Gray, MD, Gainesville, FL
Hernan Prieto, MD, Gainesville, FL
This study evaluates the clinical utility Alpha Defensin testing prior to reimplantation surgery following staged treatment of PJI.

Poster No. P0598
Fungal Periprosthetic Joint Infection: Single Institutional Experience and Literature Review
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Karan Goswami, MD, Philadelphia, PA
Noam Shohat, MD, Petach Tikva, Israel
Kier Blevins, BA, Conestoga, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA
This study investigated the prevalence of medical comorbidities in patients with fungal PJI and the outcome of surgical management of PJI caused by fungal organisms.

Poster No. P0599
Dilute Betadine Lavage Reduces the Risk of Acute Postoperative Infection in Aseptic Revision Total Knee or Hip Arthroplasty: A Randomized Controlled Trial
Tyler E. Calkins, BS, Morgantown, WV
Chris Culvern, Chicago, IL
Denis Nam, MD, MSc, Chicago, IL
Tad L. Gerlinger, MD, Winnetka, IL
Brett R. Levine, MD, Chicago, IL
Scott M. Sporer, MD, Wheaton, IL
Craig J. Della Valle, MD, Chicago, IL
Patients were randomized to receive dilute betadine lavage or saline lavage only prior to arthroscopy closure. Dilute betadine lavage reduced infection incidence from 3.2% to 0.5%.

Poster No. P0600
Failed Debridement and Implant Retention Does Not Compromise Success of Subsequent Staged Revision in Infected Total Knee Arthroplasty
Mark Zhu, Auckland, New Zealand
Katy Kim, Auckland, New Zealand
Alana Cavadino, MSc, PhD, Auckland, New Zealand
Jacob Munro, MD, Auckland, New Zealand
Simon Young, MD, FRACS, Auckland, New Zealand
This study suggested that a previously failed DAIR does not compromise the success rate of a subsequent staged revision. The use of DAIR can continue to be recommended for acute PJI.

Poster No. P0601
The Ideal Diagnostic Thresholds for Diagnosing Periprosthetic Joint Infections in Patients with Rheumatoid Arthritis: A Multicenter Study
Joshua Bingham, MD, Rochester, MN
Ayoosh Pareek, MD, Rochester, MN
Chad W. Parkes, MD, Rochester, MN
Craig J. Della Valle, MD, Chicago, IL
Adam Schwartz, MD, Phoenix, AZ
Kevin I. Perry, MD, Rochester, MN
In patients with both rheumatoid arthritis and no rheumatoid arthritis, synovial cell count was the best diagnostic test of periprosthetic joint infection with similar cutoffs.

Poster No. P0602
Presentation, Risks, and Costs of Surgical Site Infection after Primary and Revision Total Knee Replacement
Charles E. Edmiston, PhD, Milwaukee, WI
Robert J. Wright, MD, Dedham, MA
Chantal E. Holy, MSc, PhD, Somerville, MA
Eka Ghosh, BS, Bangalore, India
Brian Po-Han Chen, MSc, Somerville, NJ
David Leaper, FACS, FRCS, Dorchester, United Kingdom
Deep and superficial infection was identified in 1.63% and 18.06% of primary and revision TKR, respectively, and represented average 2-year cost ranging from $22K-57K.

Poster No. P0603
A Preliminary Investigation into the Reliability of Slice Encoding for Metal Artefact Correction MRI to Diagnose Component Loosening in People with Painful Knee Arthroplasty
Tsuneaki Takahashi, MD, Sapporo City, Japan
Owen J. OConnor, Cork, Ireland
Giovanni Lettieri, Capaccio, Italy
Anthony Redmond, PhD, Leeds, UK, United Kingdom
Michael R. Backhouse, PhD, York, United Kingdom
Daniel M. Skrzypiec, MSc, PhD, Wroclaw, Poland
Martin Stone, FRCS, MB, Leeds, United Kingdom
Hemant G. Pandit, FRCS, Oxford, United Kingdom
We analyzed the relationship between SEMAC-MRI findings and clinical outcomes such as prosthesis loosening or revision surgery. SEMAC is a useful tool in differentiating aseptic prosthesis loosening.

Poster No. P0604
Time is money! Influence on operating theatre and sterilization times of patient-specific cutting guides and single-use instrumentation for total knee arthroplasty (TKA): a full factorial design of 136 patients.
Victoria Teissier, MD, Paris, France
David J. Blau, MD, PhD, Paris, France
Moussa Hamadouche, MD, Paris, France
Aurélie Barberousse, CRA, Paris, France
Damien Talon, PhD, Paris, France
Philippe Anract, MD, Paris, France
Single use instrumentation in TKA lowers the number of instrumentation boxes and sterilization duration. Associated patient specific guides can reduce costs and risks for boxes noncompliance.

Poster No. P0605
Robotic Assisted Total Knee Arthroplasty Does Not Always Produce Quantitative Balance
Alexander C. Gordon, MD, Prospect Heights, IL
Jeffrey M. Goldstein, MD, Deerfield, IL
Chad Anderson, PA-C, Evanston, IL
Wayne M. Goldstein, MD, Morton Grove, IL
Total knee arthroplasty using robotic assisted technique is not always quantitatively balanced.

Poster No. P0606
The Influence of Saline Temperature on Cement Curing Time
Ayesha Yahya, Liberty Township, OH
Timothy Ekpo, DO, South Lyon, MI
The use of warm saline allows for faster cement setting times and reduces surgical times in total knee arthroplasty.
Poster No. P0607
A Double-Blind Randomized Controlled Equivalence Study Comparing Intra-Articular Corticosteroid to Intra-Articular Ketorolac Injections for Osteoarthritis of the Knee
Shane M. McGowan, MD, Bethlehem, PA
William E. Rodriguez, BS, Bethlehem, PA
Timothy Visser, MBA, Fountain Hill, PA
Vikas Yellapu, MBA, MD, Bethlehem, PA
Paul N. Morton, MD, Chicago, IL
Gregory F. Carolan, MD, Bethlehem, PA
Randomized clinical trial comparing the efficacy of intra-articular ketorolac with intra-articular betamethasone injections for the treatment of osteoarthritic knees.

Poster No. P0608
Cartilage Degradation Inhibition in Vitro by Novel Matrix Metalloproteinase Inhibitors
Josephine R. Coury, BA, Little Neck, NY
Ryan A. Nixon, MD, Brooklyn, NY
John A. Schwartz, MS, Fort Collins, CO
Francis - J. Johnson, PhD, Stony Brook, NY
Lorne M. Golub, DMD, MSc, Stony Brook, NY
Daniel A. Grande, PhD, Manhasset, NY
Matrix metalloproteinases (MMPs) degrade cartilage contributing to the pathophysiology of osteoarthritis. We tested in vitro five compounds derived from curcumin that inhibit MMPs by binding zinc.

Poster No. P0609
Genicular Nerve Block and Radiofrequency Ablation for the Management of Knee Osteoarthritis and Persistent Pain Following Total Knee Arthroplasty
Linda Suleiman, MD, Chicago, IL
David Kim, Las Vegas, NV
Mario Moric, MS, Chicago, IL
Adam Young, MD, Chicago, IL
Denis Nam, MD, MSc, Chicago, IL
Both OA knees and TKAs showed reductions in VAS pain scores following GNB and RFA with encouraging results. Their duration of effect and ability to delay TKA requires further investigation.

Poster No. P0610
Patellofemoral Osteoarthritis Progression and Alignment Changes after Open-Wedge High Tibial Osteotomy Do Not Affect Clinical Outcomes at Mid-Term Follow Up
Kenichi Goshima, MD, PhD, Toyama, Japan
Takeshi Sawaguchi, MD, PhD, Toyama, Japan
Kenji Shigemoto, Toyama City, Japan
Shintaro Iwai, MD, Kanazawa, Japan
Kenji Fujita, MD, Toyama, Japan
Yuki Yamamuro, MD, Toyama, Japan
Changes in patellofemoral alignment and patellofemoral OA progression did not affect the clinical outcomes of OWHTO at mid-term follow up.

Poster No. P0611
Simultaneous Bilateral versus Unilateral Total Knee Arthroplasty: An Analysis of the American College of Surgeons National Surgical Quality Improvement Program from 2008 to 2016
Jared M. Newman, MD, Brooklyn, NY
Preston W. Griece, MD, Thornwood, NY
Roby Abraham, MD, Roslyn, NY
Qais Naziri, MD, MBA, Brooklyn, NY
Nipun Sodhi, BA, Cleveland, OH
Rohan Desai, MD, Brooklyn, NY
Aditya V. Maheshwari, MD, Brooklyn, NY
Carlos A. Higuera Rueda, MD, Weston, FL
Michael A. Mont, MD, New York, NY
This study found that bilateral TKA was associated with greater odds of being discharged to a facility, as well as greater odds of major and minor complications when compared to unilateral TKA.

Poster No. P0612
Sleep Apnea Increases 90-Day Complication and Costs Following Primary Total Knee Arthroplasty
Rushabh Vakharia, MD, Fort Lauderdale, FL
Wayne Cohen-Lewy, BA, MD, Miami, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Chester J. Donnelly, MD, Miami, FL
Tsun Yee Law, MD, Fort Lauderdale, FL
Martin W. Roche, MD, Fort Lauderdale, FL
With the increasing prevalence of patients with sleep apnea undergoing primary TKA, the study illustrates complications orthopaedic surgeons may encounter in patients following primary TKA.

Poster No. P0613
Analyzing the Safety of Simultaneous Bilateral Total Knee Arthroplasty in the Obese Patient Population
Paraskevi (Vivian) Papas, BS, Whitestone, NY
Mikhail Khaimov, DO, Rego Park, NY
Shane Dluzeneski, Brooklyn, NY
Matthew S. Hepinstall, MD, New York, NY
Giles R. Scuderi, MD, New York, NY
Fred D. Cushner, MD, New York, NY
Surgeons should carefully analyze the comorbidities of patients with a BMI above 40 kg/m2 such as cardiac history, diabetes mellitus, and smoking status when considering operating.

Poster No. P0614
Comparison of an Existing and New Total Knee Arthroplasty Implant Systems from the Same Manufacturer: A Prospective, Multicenter Study
William G. Hamilton, MD, Alexandria, VA
Steven L. Barnett, MD, Villa Park, CA
Ivan Brenkel, FRCS, Dunfermline, United Kingdom
Mark Clatworthy, MD, Auckland, New Zealand
James Lesko, PhD, Warsaw, IN
Paul W. Allen, FRCS, Dunmow, United Kingdom
Stephen R. Kantor, MD, New London, NH
Kimberly Dwyer, Warsaw, IN
The implant survivorship and radiographic assessments showed similar outcomes between the two groups. The New TKA demonstrated modest improvements in PROMs across a broad spectrum of measures.

Poster No. P0615
Most Patients Can Kneel after Total Knee Arthroplasty
Sara S. Wallace, MD, MPH, Chicago, IL
Richard A. Berger, MD, Chicago, IL
Most patients can kneel after total knee arthroplasty, and those who cannot kneel can be taught to kneel with a simple protocol.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0616
Opioid Abuse is an Independent Risk Factor for Deep Vein Thrombosis, Pulmonary Embolism, and Venous Thromboembolism Following Primary Total Knee Arthroplasty
Rushabh Vakharia, MD, Fort Lauderdale, FL
Ajit M. Vakharia, BS, Kennesaw, GA
Scott A. Nelson, DO, Fort Lauderdale, FL
Scott Polansky, DO, Pompano Beach, FL
Arthur L. Malkani, MD, Louisville, KY
Martin W. Roche, MD, Fort Lauderdale, FL

With the increasing prevalence of opioid abusers undergoing primary total knee arthroplasty (TKA), the study illustrates complications orthopaedic surgeons may encounter in their practice.

Poster No. P0617
Differences in Functional Outcome and Quality of Life Scores at 10 Years Following Fixed-Bearing Unicompartmental Knee Arthroplasty and Total Knee Arthroplasty: A Propensity Score-Matched Cohort Analysis
Wei Ling Stacy Ng, MBBS, Singapore, Singapore
Yangqi Jiang Jerry Chen, MBBS, Singapore, Singapore
Ying Hao, Singapore, Singapore
Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore
Shi-lu Chia, MBBS, FRCS (Ortho), Singapore, Singapore
Hee-Nee Pang, MBBS, MRCs, Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Seng-Jin Yeo, FRCS, Singapore, Singapore

UKA has greater knee flexion at 10 years and better early functional outcome but mid to long-term outcomes of pain relief, functional improvement, and quality of life were comparable with TKA.

Poster No. P0618
Robotic vs. Conventional Primary Total Knee Arthroplasty: Clinical and Radiological Long-Term Results with a Minimum Follow Up of 10 Years
Seung Min Na, Bonghwa, Republic of Korea
Kyujin Cho, MD, Gwangju, Republic of Korea
Jong-Keun Seon, MD, Hwasungun, Republic of Korea
Eun K. Song, MD, Gwangju, Republic of Korea

Excellent survival with both robotic and conventional TKA and similar clinical outcomes at long-term follow up.

Poster No. P0619
The Utility of Preoperative Blood Screening Before Hip and Knee Arthroplasty
Michael O’Sullivan, MD, Wallstonecraft, Australia
Matt C. Lyons, MD, Cremorne, Australia
Sarah Shumborski, BS, MBBS, Bellevue Hill, Australia
Colin J. Maclean, MD, London, ON, Canada
Benjamin Gooden, FRACS, Wallstonecraft, Australia
Justin P. Roe, MD, Sydney, Australia
Lucy J. Salmon, PhD, Sydney, Australia
Sarthak Chopra, Parramatta, Australia
Leo A. Pinczewski, FRACS, Sydney, Australia

Over 80% of subjects undergoing arthroplasty demonstrate abnormal results on preoperative blood screening. Clinically important factors were abnormal in 40% of those <50 and 55% over 80 years.

Poster No. P0620
Incidence of Total Knee Replacement Does Not Change with Behavioral Lifestyle Intervention in Type II Diabetics
William M. Mihalko, MD, PhD, Germantown, TN
Karen C. Johnson, Memphis, TN
Phyllis A. Richey, PhD, Memphis, TN
Kunal Singhal, PhD, PT, Memphis, TN
Rebecca H. Neiberg, MS, Winston-Salem, NC
Judy L. Bahnson, Winston-Salem, NC
Jeanne Clark, MD, MPH, Baltimore, MD
Frank Greenway, MD, Baton Rouge, LA
Cora E. Lewis, MD, Birmingham, AL
James O. Hill, PhD, Aurora, CO
John Foreyt, PhD, Houston, TX
Anne Peters, MD, Los Angeles, CA
Robert W. Jefferey, Shelton, WA
Thomas A. Wadden, PhD, Philadelphia, PA
Steven E. Kahn, Seattle, WA
William Knowler, MD, Phoenix, AZ
Medha N. Munshi, MD, Boston, MA
Xavier Pi-Sunyer, MD, MPH, New York, NY
John M. Jakicic, PhD, Pittsburgh, PA
Rena Wing, Providence, RI
Helen P. Hazuda, MD, San Antonio, TX
Mark A. Espeland, PhD, Winston-Salem, NC

LookAHEAD

The Look AHEAD trial was successful in maintaining long-term weight loss through use of an ILI program.

Poster No. P0621
Total Knee Operative Indications Based on Preoperative Functional Scores: Are We Operating Earlier than Ever Before?
Jan C. Krujit, MD, Montreal, QC, Canada
Nikolaos Stavrououlos, MBA, MD, Athens, Greece
Peter Dust, MD, Montreal, QC, Canada
Olga Huk, MD, Westmount, QC, Canada
David Zukor, MD, Montreal, QC, Canada
John Antoniou, MD, FRCSC, Montreal, QC, Canada
Stephane Bergeron, MD, Kirkland, QC, Canada

Orthopaedic surgeons are universally performing total knee replacements at the same preoperative scores, independent of country of origin or year of surgery.

Poster No. P0622
Clinical Results and Knee Proprioception Difference in Knee Arthroplasty: Unicompartmental versus Total Cruciate Retaining versus Posterior-Stabilized Arthroplasty
Edoardo Franceschetti, MD, Roma, Italy
Antongiuilio Lisanti, Tramutola, Italy
Riccardo Ranieri, Terri, Italy
Alessio Palumbo, MD, Roma, Italy
Michele Paciotti, MD, Rome, Italy
Edoardo Giovannetti De Sanctis, Rome, Italy
Nicola Maffulli, MD, PhD, London, United Kingdom
Francesco Franceschi, MD, Rome, Italy

Unicompartmental, total cruciate retaining, and total posterior-stabilized knee arthroplasty showed similar clinical results, but knee proprioception is better with unicompartmental knee arthroplasty.
Poster No. P0623
Does Simultaneous Tourniquet Inflation Increase Risks in Bilateral Total Knee Arthroplasty?
William J. Long, MD, New York, NY
Robert Borzio, MD, Jersey City, NJ
Zlatan Cizmic, MD, Sterling Heights, MI
Dvorah L. Felberbaum, PA-C, New York, NY
Lazaros A. Poultsides, MD, MS, New York, NY

Simultaneous tourniquet inflation decreases patient anesthesia time and exposure, while also decreasing costs by shortening the OR time without increasing the risk of complications.

Poster No. P0624
Comparing Revision, Readmission Rates, and Costs of Robotically-Assisted and Manual Unicompartmental Knee Arthroplasty
Christina Cool, New York, NY
Keith Needham, New York, NY
Anton Khlopas, MD, Elmwood Park, IL
Michael A. Mont, MD, New York, NY

We have demonstrated that 24 months following the primary UKA procedure, patients who underwent robotic-arm assisted UKA had fewer revision procedures and incurred lower mean costs for the index stay.

Poster No. P0625
Does a Non-Stemmed Constrained Condylar Prosthesis Predispose to Failure of Primary Total Knee Arthroplasty: Mid-Term Follow Up
Michael J. Moses, MD, New York, NY
Isaac A. Dayan, Brooklyn, NY
Parthiv A. Rathod, MD, New York, NY
Ajit J. Deshmukh, MD, New York, NY
Scott E. Marvin, MD, Lake Success, NY
Alan J. Dayan, MD, Brooklyn, NY

We examined 404 patients undergoing TKA with constrained or posterior stabilized prostheses. Clinical and radiographic outcome measures demonstrate equivalent results for CCK and PS TKA at 6 years.

Poster No. P0626
The Impact of Postoperative Recurvatum Deformity on Functional Outcomes and Satisfaction Ten Years After Total Knee Arthroplasty
Graham S. Goh, MBBS, MRCS(Ed), Singapore, Singapore
Yongqiang Jerry Chen, MBBS, Singapore, Singapore
Hamid Rahmatullah Bin Abd Razak, MBBS, Singapore, Singapore
Alicia Choon Lee, MBBS, Singapore, Singapore
Ahmad Aidri A. Ahmad, MBBS, Singapore, Singapore
Darren Tay, MBBS, FRCS(Ortho), Singapore, Singapore
Shi-Ju Chia, MBBS, FRCS(Ortho), Singapore, Singapore
Ngai-Nung Lo, MBBS, Singapore, Singapore
Seng-Jin Yeo, MBBS, Singapore, Singapore

Postoperative RD leads to a poorer functional outcome and may adversely affect satisfaction up to 10 years after TKA. Patients with RD at 2 years were 5 times more likely to have RD at 10 years.

Poster No. P0627
Red Cell Distribution Width: An Unappreciated Parameter that Predicts Mortality
Arash Aalirezaie, MD, Philadelphia, PA
Feng Chih Kuo, MD, Kaohsiung City, Taiwan
Kier Blevins, BA, Conestoga, PA
Javad Parvizi, MD, FRCS, Philadelphia, PA

RDW is a commonly reported parameter of blood count that can be used alongside CCI to screen patients at high risk of mortality following total joint arthroplasty.

Poster No. P0628
The Relationship between Self-Reported Measures and Objective Functional Tests in Patients Undergoing Total Joint Arthroplasty
Gregoris Komodikis, MD, Philadelphia, PA
Kier M. Blevins, BA, MS, Conestoga, PA
Meredith P. Crizer, Philadelphia, PA
Peter Pham, BS, MS, Dacula, GA
Richard H. Rothman, MD, Philadelphia, PA
Antonia F. Chen, MD, MBA, Newton, MA

The TUG and gait speed tests are useful performance office-based tests that can provide objective information of the impact of OA on the preoperative health status of patients.

Poster No. P0629
Intraoperative Medial Stability throughout the Range of Motion Correlates with Patient Satisfaction after Cruciate-Retaining Total Knee Arthroplasty
Kazunori Hino, PhD, Ehime, Japan
Tatsuhiko Kotsuna, MD, PhD, Ehime, Japan
Kunihiro Watamori, MD, Ehime, Japan
Yasumitsu Ishimaru, Toon-Shi, Japan
Hiroshi Kyomatu, MD, PhD, Toon, Japan
Tomofumi Kinoshita, Toon, Japan
Hirokasa Miura, MD, Ehime, Japan

Intraoperative acquisition of medial stability and lateral laxity throughout the range of motion improves clinical outcome in CR-TKA.

Poster No. P0630
Thirty-Year Life-Course Study of One Manufacturer’s Medial Mobile Bearing Unicompartmental Knee Arthroplasty – Assessing Treatment Success
Andrew J. Price, FRCS, Oxford, United Kingdom
Hannah A. Wilson, MA, MBCHB, Bristol, United Kingdom
Robert Middleton, MA, BM BCh, Oxford, United Kingdom
Ulf Svard, MD, Skovde, Sweden

Eighty-four percent of patients had one manufacturer’s UKA as a single procedure to successfully treat their knee osteoarthritis.

Poster No. P0631
Extramedullary Spacer Block Technique for Unicompartmental Knee Arthroplasty: Results of 300 Consecutive Patients
Alexander P. Sah, MD, Fremont, CA

UKA can be performed reliably with this completely extramedullary technique, leading to proper correction of limb alignment and to reproducible improvement in clinical outcomes.

Poster No. P0632
No Difference In Five-Year Clinical and Radiographic Outcomes Between Kinematic and Mechanical Alignment in Total Knee Arthroplasty: A Randomized Controlled Clinical Trial
Simon Young, MD, FRACS, Auckland, New Zealand
Niall Sullivan, Auckland, New Zealand
Sherina Holland, FRACS, Auckland, New Zealand
Matthew L. Walker, MD, Auckland, New Zealand
Ali Bayan, FRACS, Auckland, New Zealand
Bill Farrington, FRACS, FRCS, Albany, New Zealand

Randomized controlled trial with 5 year results comparing mechanical alignment vs. kinematic in total knee arthroplasty. No significant differences in PROMs, revisions, or radiographic outcomes.
**Poster No. P0633**

**No Increased Risk of Failure, but Poor Function in Patients with a Body Mass Index Over 30 Undergoing Mobile Bearing Unicompartmental Knee Arthroplasty**

*Samuel W. Carlson, MD, Rochester, MN*
Juan S. Vargas-Hernandez, MD, Rochester, MN
Bayard C. Carlson, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN

Obesity does not affect the survivorship free of revision for mobile-bearing UKA at minimum two year follow up. Obesity was a poor predictor of functional knee society scores.

**Poster No. P0634**

**Is Highly Cross-Linked Polyethylene Safe in Posterior Cruciate Substituting Knee Arthroplasty?**

*Young-Hoo Kim, MD, Seoul, Republic of Korea*
Jangwon Park, MD, MSc, San Diego, CA
Jun-Shik Kim, MD, Seoul, Republic of Korea

Although our study of 110 patients (220 knees) with PS TKAs showed that the use of HXLPE was safe, there was no evidence of superiority of HXLPE over conventional polyethylene.

**Poster No. P0635**

**Implant Realignment: An Alternative to Ligamentous Release in Total Knee Arthroplasty Balancing**

*Chesley Durgin, MD, Tampa, FL*
Kenneth A. Gustke, MD, Temple Terrace, FL

Implant realignment balancing in TKA showed improvement in KSS-Function scores at 3-months and 1-year postoperatively when compared with traditional soft tissue releases.

**Poster No. P0636**

**Postoperative Tibial Tuberosity and Trochlear Groove Distance Influences Patellar Tilt after Total Knee Arthroplasty**

*Shinichiro Nakamura, MD, PhD, Kyoto, Japan*
Koichiro Shima, Kyoto, Japan
Shinichi Kuriyama, MD, PhD, Kyoto, Japan
Kohei Nishitani, MD, PhD, Kyoto, Japan
Hiromu Ito, Kyoto, Japan
Shuichi Matsuda, MD, Kyoto, Japan

Postoperative TT-TG distance can be a useful indicator to predict patellar maltracking after TKA, whereas component rotation itself does not affect patellar tilt.

**Poster No. P0637**

**Risk Factors and Early Complications of Patellofemoral Arthroplasty**

*Kevin T. Rezzadeh, BA, New York, NY*
Omar A. Behery, MD, New York, NY
Jonathan M. Vigdorchik, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY

This study explores rates and risk factors of 30-day postoperative complications in patients undergoing PFA.

**Poster No. P0638**

**Outcomes of Periprosthetic Tibia Fractures Around Total Knee Arthroplasty**

*George Yakubek, DO, Cleveland, OH*
Matthew E. Deren, MD, Cleveland, OH
Charles Cossell, DO, Warrensville Heights, OH

Periprosthetic fractures of the tibia near a TKA are rare events, and surgical intervention in certain fractures are associated with increased complications.

**Poster No. P0639**

**Patient Perceptions of Outpatient Total Knee Arthroplasty**

*Muyibat A. Adelani, MD, Saint Louis, MO*
Robert L. Barrack, MD, Saint Louis, MO

The vast majority of patients who have recently undergone total knee arthroplasty felt that they could not safely undergo the procedure as an outpatient.

**Poster No. P0640**

**Polyester Mesh Dressings Reduce Delayed Wound Healing and Reoperations Compared to Silver-Impregnated Occlusive Dressings After Partial and Total Knee Replacement**

*Forrest Anderson, MD, New York, NY*
Akshay Lakra, MBBS, MD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY

Polyester mesh dressings significantly reduced episodes of delayed wound healing and reoperations compared to silver-impregnated dressings in a series of 347 knee arthroplasties at 2 weeks post op.

**Poster No. P0641**

**Can an Online Physical Therapy Program Reduce Post-Acute Care Costs Following Primary Total Knee Arthroplasty?**

*Meredith P. Crizer, Philadelphia, PA*
Seong Jin Kim, MPH, New York City, NY
Mikayla McGrath, Philadelphia, PA
Christina Vannello, BSN, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

Patient access to an online PT program may help decrease the utilization, and therefore cost, of formal at-home PT following TKA, without reducing patients’ postoperative functional outcomes.

**Poster No. P0642**

**Readmissions After Primary Total Knee Arthroplasty: A Granular Analysis**

*Carlos J. Lavernia, MD, Coral Gables, FL*

Most readmissions after primary TKA in our cohort were not related to the index procedure. There were multiple unavoidable readmissions.

**Poster No. P0643**

**Simultaneous Bilateral Total Knee Arthroplasty Does Not Increase 90-Day Hospital Returns**

*Sean P. Ryan, MD, Durham, NC*
Daniel Goltz, MBA, MD, Durham, NC
Claire B. Howell, Durham, NC
Samuel S. Wellman, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Simultaneous bilateral total knee arthroplasty does not consume more 90-day hospital resources than sequential procedures.
Poster Session II

Poster No. P0644
Increased Knee Range of Motion and Postoperative Function with Metal-on-Polyethylene Relative to All-Cement Molded Articulating Spacers
Nicole E. George, DO, Townsend, MD
Chukwuweike U. Gwam, MD, Greenbelt, MD
Jennifer I. Etcheson, MD, MS, Baltimore, MD
Nequesha Mohamed, MD, Ajax, ON, Canada
Iciar M. Davila Castrodad, MD, Baltimore, MD
John Tarazi, MD, El Sobrante, CA
Jaydev B. Misty, MD, Brooklyn, NY
James Nace, DO, PT, Cockeysville, MD
Ronald E. Delanois, MD, Baltimore, MD

Metal-on-polyethylene articulating knee spacers decrease total hospital inpatient costs and improve functional outcomes relative to all-cement molded articulating spacers.

Poster No. P0645
Above Knee Amputation Following Total Knee Arthroplasty: An Evaluation of Patient Outcomes
Sean P. Ryan, MD, Durham, NC
Marcus Dilalio, BA, Durham, NC
Andrew J. Luzzi, BS, Philadelphia, PA
Mitchell R. Klement, MD, Philadelphia, PA
Antonia F. Chen, MD, MBA, Newton, MA
Thorsten M. Seyler, MD, PhD, Durham, NC

Total knee arthroplasty complications resulting in above knee amputation is associated with a high mortality rate and low functional status.

Poster No. P0646
Short-Term Local Instillation of Vancomycin and Tobramycin combined with Negative Pressure Wound Therapy Improves Clinical Outcomes after Two Stage Arthroplasty for Prosthetic Joint Infection vs. Standard of Care
Brian C. de Beaubien, MD, Fenton, MI
Sarah Schmiege, PhD, Aurora, CO
Kevin D. Warner, PhD, Saginaw, MI
Kimberly Martin, PhD, Fort Collins, CO

A novel method of short-term, cyclic, intra-articular instillation of vancomycin and tobramycin in two stage arthroplasty for PJI improves rate of infection eradication at 12 weeks and one year.

Poster No. P0647
Same-Day Surgery Does Not Increase the Manipulation Under Anesthesia and Reoperation Rate for Stiffness Following Bilateral Total Knee Arthroplasty
Lazaros A. Poultsides, MD, MSC, New York, NY
Georgios Triantafyllopoulos, MD, Athens, Greece
Florian Wanivenhaus, MD, Zurich, Switzerland
Matthias Pumberger, MD, Berlin, Germany
Stavros G. Memtsoudis, MD, PhD, New York, NY
Thomas P. Sculco, MD, New York, NY

Same-day bilateral total knee arthroplasty was not associated with increased incidence of single or multiple manipulation under anesthesia and stiffness-related reoperation rates.

Poster No. P0648
Protocol Driven Revision for Stiffness after Total Knee Arthroplasty Improves Motion and Clinical Outcomes
Kevin T. Hug, MD, Redwood City, CA
Derek F. Amanullah, MD, Redwood City, CA
James I. Huddleston, MD, Redwood City, CA
William J. Maloney, MD, Redwood City, CA
Stuart B. Goodman, MD, Redwood City, CA

Revision TKA can improve outcomes for patients with stiffness, and complete component revision may offer the largest improvements compared to component retention or partial revision.

Poster No. P0649
Complications After Revision Total Knee Arthroplasty in the Obese Population: A Retrospective Comparative Study
Martin Bedard, MD, Quebec, QC, Canada
Jean Pierre-Olivier, MD, Pintendre, QC, Canada
Julien Caron, ACNP-BC, ATC, St. Roch Des Aulnaies, QC, Canada
Etienne Belzile, MD, Quebec, QC, Canada
Stephane Pelet, MD, PhD, Quebec, QC, Canada

Obesity significantly increases the occurrence of orthopaedic complications following RTKA. The obese patient should be informed prior to revision TKA that there is an increased risk of complications.

Poster No. P0650
Revision Reasons, Oxidation, and Damage Mechanism Analysis of Retrieved Vitamin E-Stabilized Highly Crosslinked Polyethylene in Total Knee Arthroplasty
Hannah Spece, MS, Philadelphia, PA
Jaclyn Schachtner, Philadelphia, PA
Samuel Y. Huang, Flushing, NY
Jay K. Leung, Philadelphia, PA
Daniel MacDonald, Philadelphia, PA
Gregg R. Klein, MD, Paramus, NJ
Steven M. Kurtz, PhD, Philadelphia, PA

This retrieval study observed no difference in oxidation between vitamin-E blended and diffused HXLPE knee inserts, and observed oxidation was minimal but correlated with implantation time. Primary damage mechanisms included burnishing, pitting, and scrat.

Poster No. P0651
Rheumatoid Arthritis Patients have Lower Preoperative Expectations but Greater Clinical Improvement After Total Knee Arthroplasty Compared to Osteoarthritis Patients
Jason L. Blevins, MD, New York, NY
Yu-Fen Chiu, MS, New York, NY
Stephen Lyman, PhD, New York, NY
Susan Goodman, MD, New York, NY
Lisa A. Mandl, MD, MPH, New York, NY
Peter K. Sculco, MD, New York, NY
Mark P. Figgie, MD, New York, NY
Alexander S. McLawhorn, MD, MBA, Irvington, NY

Rheumatoid arthritis patients have lower preoperative expectations but greater clinical improvement and comparable satisfaction after total knee arthroplasty compared to osteoarthritis patients.

Poster No. P0652
Same Day Physical Therapy Following Total Knee Arthroplasty Leads to Improved Postoperative Functional Outcomes and Decreased Opioid Consumption
Akhay Lakra, MBBS, MD, New York, NY
Emma Jennings, BS, New York, NY
Nana O. Sarpong, MD, Valley Stream, NY
Ari Berg, New York, NY
Herbert J. Cooper, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Jeffrey A. Geller, MD, New York, NY

Physical therapy within 12 hours after surgery led to better physical therapy performance, reduced morphine equivalents normalized over the hospital stay, and more patients discharged home.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
FOOT AND ANKLE

Poster No. P0653
Physical Therapy on Postoperative Day 0 Following Total Knee Arthroplasty: A Randomized Controlled Trial of 394 Patients

Daniel D. Bohl, MD, MPH, Chicago, IL
Jefferson Li, BA, Chicago, IL
Tyler E. Calkins, BS, Morgantown, WV
Brian Darrith, Chicago, IL
Tori Edmiston, Colorado Springs, CO
Denis Nam, MD, MSc, Chicago, IL
Tad L. Gerlinger, MD, Winnetka, IL
Brett R. Levine, MD, Chicago, IL
Craig J. Della Valle, MD, Chicago, IL

This randomized controlled trial of 394 patients suggests no difference in length of stay or patient satisfaction when PT is initiated on the day of TKA versus the morning after.

Poster No. P0654
Delaying Physical Therapy Prolongs Total Knee Arthroplasty Recovery

Andres F. Duque, MD, MSc, Egg Harbor Township, NJ
Alvin C. Ong, MD, Linwood, NJ
Peter Boyle, DO, Spring, TX
Adriana P. Mora, BSN, Absecon, NJ
Zachary D. Post, MD, Egg Harbor Township, NJ
Danielle Y. Ponzo, MD, Longport, NJ
Fabio Orozco, MD, Margate City, NJ

Patient outcomes are comparable between use of a delayed versus immediate postoperative PT protocol. However, delay in PT was associated with higher pain scores at 6 weeks.

Poster No. P0655
Peripheral Nerve Injury after 383,000 Total Knee Arthroplasties Using a New York State Database

Alexander Christ, MD, New York, NY
Yu-Fan Chiu, MS, New York, NY
Amethia D. Joseph, New York, NY
Geoffrey H. Westrich, New York, NY
Stephen Lyman, PhD, New York, NY

In over 383,000 TKAs, the rate of peripheral nerve injury (PNI) was 0.12%. Valgus alignment, spinal disorder, younger age, bilateral surgery, and higher comorbidities increased patients’ risk.

Poster No. P0659
Structures at Risk during Percutaneous Extra-Articular Chevron Osteotomy: A Cadaveric Study

Maria R. McGann, DO, Westerville, OH
Travis Langan, DPM, Westerville, OH
Gregory C. Berlet, MD, Westerville, OH
Mark A. Prissel, DPM, Westerville, OH

Structures at risk during minimally invasive hallux valgus corrective surgery were identified and evaluated for injury in a cadaveric study.

Poster No. P0661
Is Generalized Ligamentous Laxity a Prognostic Factor for Recurred Hallux Valgus Deformity?

Miyong An, Cheong, Republic of Korea
Byung-Ki Cho, MD, Cheongju, Republic of Korea

There were no statistical differences in the clinical and radiographic outcomes between hallux valgus with and without generalized ligamentous laxity. Generalized ligamentous laxity demonstrated no definitive effects on postoperative recurrence of hallux valgus.

Poster No. P0662
The Use of Synthetic Polyvinyl Alcohol Hydrogel Implants in the Lesser Metatarsal Heads: Is it Safely Doable? A Cadaveric Study

Cesar De Cesar Netto, MD, PhD, Baltimore, MD
Alexandre L. Godoy-Santos, MD, PhD, Sao Paulo, Brazil
Lauren Roberts, MD, Vancouver, BC, Canada
Taylor Cabe, BA, New York, NY
Thos Haranoonroj, MD, Bangkok, India
Ashraf Fansa, Toledo, OH
Andrew R. Roney, BA, New York, NY

In this cadaveric study, we evaluated the promising use of synthetic polyvinyl alcohol hydrogel implants in the head of the lesser metatarsals.
Poster No. P0663
Comparison of Syndesmotic Malreduction Rate following Trans-Syndesmotic Screw Fixation in Supination External Rotation versus Pronation External Rotation Type Ankle Fracture: A Prospective Analytic Study
Chamnann Rungprai, MD, Bangkok, Thailand
Yantasree Sripanich, MD, Bangkok, Thailand
Nusorn Chaiaphum, MD, Rajachathvee District, Thailand
The incidence of concomitant syndesmotic injury and syndesmotic malreduction rate following trans-syndesmotic screw fixation was significantly higher in PER type compared SER type ankle fracture. The malposition of distal fibula was displaced anteriorly.

Poster No. P0664
Lack of Displacement of the Fibula is NOT Confirmation of Ankle Stability in Stress Exam Pattern Ankle Fractures
Amir Shahien, MD, Boston, MA
Paul Tornetta III, MD, Boston, MA
The purpose of this study was to evaluate and compare radiographic findings in stress (+) SE4 injuries vs. SE2 injuries.

Poster No. P0665
Timing of Adverse Events Following Open Reduction and Internal Fixation of the Ankle
Daniel D. Bohi, MD, MPH, Chicago, IL
Simon Lee, MD, Chicago, IL
Kamran S. Hamid, MD, MPH, Chicago, IL
Johnny L. Lin, MD, Oak Brook, IL
George B. Holmes, MD, Lisle, IL
This study of 17,318 patients characterizes the time periods during which complications are most likely to occur following open reduction and internal fixation of the ankle.

Poster No. P0666
Knee-Walker Associated Falls After Foot or Ankle Surgery
Karl Green, ACNP-BC, ATC, Memphis, TN
Marian L. Shaw, BS, RN, Germantown, TN
Garnett A. Murphy, MD, Germantown, TN
Susan N. Ishikawa, MD, Cordova, TN
Benjamin J. Grear, MD, Germantown, TN
Clayton C. Bettin, MD, Memphis, TN
Jane Yeh, MD, Vancouver, BC, Canada
David R. Richardson, MD, Southaven, MS
Of 271 knee-walker users, 42% fell, some multiple times; only 25% reported injuries, most of which required no treatment. There was a high level of patient satisfaction (89%) with the knee-walker.

Poster No. P0667
Heat Generation in Oscillatory vs. Unidirectional Bone Drilling Methods for K-Wire Insertion: A Pilot Study
Lei Chen, PhD, Ann Arbor, MI
Paul Talusan, MD, Ann Arbor, MI
Yuanqiang Luo, Ann Arbor, MI
Dae Woo Park, Ilsan, Republic of Korea
Fred Finney, MD, Ann Arbor, MI
James R. Holmes, MD, Ann Arbor, MI
Albert Shih, PhD, Ann Arbor, MI
Heat generation during K-wire insertion using two drilling methods was compared and oscillatory method generates less heat than unidirectional one due to smaller torque applied along longer time.

Poster No. P0668
Perioperative Opioid Analgesics and Hallux Valgus Correction Surgery: Trends, Risk Factors for Prolonged Use, and Complications
Victor Anciano Granadiño, MD, Charlottesville, VA
Minton T. Cooper, MD, Charlottesville, VA
Brian C. Werner, MD, Charlottesville, VA
The most significant risk factor for prolonged postoperative opioid use after bunion correction is the degree of preoperative use. Opioid use is associated with complications following surgery.

Poster No. P0669
Evaluation of First Metatarsal Torsion by Using 3D Analysis and Computed Tomography: Is First Metatarsal Torsion a Risk Factor for Hallux Valgus?
Tadashi Kimura, Tokyo, Japan
Makoto Kubota, MD, Tokyo, Japan
Hidekazu Hattori, MD, Tokyo, Japan
Naoki Suzuki, Tokyo, Japan
Hattori Asaki, Tokyo, Japan
Keishi Marumo, MD, Tokyo, Japan
We evaluate first metatarsal torsion in 3D in feet with and without hallux valgus. Internal torsion of the first metatarsals is significantly more pronounced in feet with hallux valgus.

Poster No. P0670
The Value of Intraoperative Histopathology in Morton's Neuroma: Effects on Diagnosis, Treatment, and Outcomes
Tammer Raouf, Lindenwold, NJ
Elizabeth L. McDonald, BA, Bryn Mawr, PA
Daniel J. Fuchs, MD, Philadelphia, PA
Rachel Shakked, MD, Media, PA
Steven M. Raikin, MD, Philadelphia, PA
Reducing routine histopathologic evaluation of Morton’s neuroma specimens may be warranted and serve as a cost saving measure.

Poster No. P0671
Conservative Treatment of Plantar Fasciitis with or without Calcaneal Spur: A Prospective Analytic Study
Chamnann Rungprai, MD, Bangkok, Thailand
Parinya Maneeprasopchoke, MD, Bangkok, Thailand
The conservative treatment in patients with plantar fasciitis patients demonstrated significant improvement of functional outcomes in both non-calcaneal spur and calcaneal spur group as measured with VAS, SF-36, and FAAM. Patients with no calcaneal spurs.

Poster No. P0672
Health Literacy in Patients Undergoing the Lapidus Procedure: A Study of Comprehension
Lauren G. Volpert, BA, New York, NY
Andrew R. Roney, New York, NY
Scott Ellis, MD, New York, NY
Andrew Rosenbaum, MD, Delmar, NY
Stephen V. Costigliola, PA-C, New York, NY
We evaluated patient comprehension of a perioperative instruction and information sheet given to patients indicated for a Lapidus-type forefoot reconstruction.

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**Poster No. P0673**  
**Influence of Local Chemokine Delivery and Postoperative Peripheral Blood Mobilization on Achilles Tendon Repair**  
*Megan Hsu, Royal Oak, MI*  
Bo N. Lo, MD, Royal Oak, MI  
Meagan Saffie, MS, Royal Oak, MI  
Erin A. Baker, PhD, Royal Oak, MI  
Zachary Vaulpe, MD, Bloomfield Hills, MI  
Paul T. Fortin, MD, Royal Oak, MI  
Kevin C. Baker, PhD, Royal Oak, MI

This study investigated the effect of AMD3100 and local delivery of a stem-cell-associated chemokine on surgical repair of the Achilles tendon in a rat model.

**Poster No. P0674**  
**Functional Outcomes and MRI Results Following Knotless Repair of Acute Achilles Tendon Ruptures**  
*Brian D. Steginsky, DO, Chicago, IL*  
Mallory Suhling, BS, Libertyville, IL  
Anand M. Vora, MD, Lake Forest, IL

Thirty patients had knotless Achilles tendon repair. The cohort exhibited superb functional outcomes and early return to activity. Distal stump tendinosis and calcaneal stress fractures were not present.

**Poster No. P0675**  
**Operative Time as an Independent Risk Factor for Adverse Events Following Open Reduction and Internal Fixation of the Ankle**  
*Daniel D. Bohl, MD, MPH, Chicago, IL*  
Ani Gowd, BS, Cary, NC  
Kamran S. Hamid, MD, MPH, Chicago, IL  
Simon Lee, MD, Chicago, IL  
George B. Holmes, MD, Lisle, IL  
Johnny L. Lin, MD, Oak Brook, IL

This study suggests that operative time is linearly and independently associated with increased incidence of postoperative complications following ankle fracture open reduction and internal fixation.

**HAND AND WRIST**  

**Poster No. P0676**  
**Risk Factors and Predictive Algorithm for 30-Day Mortality and Unplanned Readmission Following Distal Upper Extremity Amputation: A Study of the National Surgical Quality Improvement (NSQIP) Database**  
*Konrad D. Knussel, BA, MSc, Cleveland Heights, OH*  
Jerry Y. Du, MD, Cleveland, OH  
Kevin J. Malone, MD, Cleveland, OH

Risk factors for mortality or unplanned readmission following distal upper extremity amputation are older age, smoking, renal comorbidities, severe ASA and wound class, and nontraumatic amputation.

**Poster No. P0677**  
**Factors Associated with Conversion to Wrist Arthrodesis after Proximal Row Carpectomy or Four Corner Arthrodesis**  
*Jonathan Lans, MD, Boston, MA*  
*Jan Jonas Van Hernen, BS, Boston, MA*  
Neal C. Chen, MD, Boston, MA

Retrospective database study looking at factors associated with conversion to wrist arthrodesis or arthroplasty after proximal row carpectomy (PRC) or four-corner arthrodesis (FCA).

**Poster No. P0678**  
**Arthroscopic Double-Bundle Ligamentoplasty for Osteoarthritis of the Thumb Carpometacarpal Joints: Clinical and Radiological Outcomes with a Minimum Two-Year Follow Up**  
*Masaya Tsujii, MD, PhD, Tsu, Japan*  
Kazuya Odake, Tsu, Japan  
Akihiro Sudo, MD, Tsu City, Japan

We described a new technique using arthroscopy and short-term results for thumb CMC-OA. The technique was effective, and appeared to be useful as a first-choice because of preservation of healthy tissues.

**Poster No. P0679**  
**Capitohamate Lengthening Osteotomy to Correct Decreased Carpal Height in Advanced Kienbock’s Disease**  
*Mohamed A. Quolquela, MD, PhD, Tanta, Egypt*  

In advanced Kienbock’s disease, capito-hamate lengthening osteotomy restores carpal height thus correcting scaphoid overflexion. Fixation with Herbert screw permits early postoperative motion to avoid stiffness and ensures healing of the osteotomy through.

**Poster No. P0680**  
**Revascularization of the Lunate in Stage II Kienbock’s Disease by Lunotriquetral Arthrodesis**  
*Martin A. Posner, MD, New York, NY*  
*Brandon Shulman, MD, New York, NY*  
*Steven M. Green, MD, New York, NY*

Lunotriquetral arthrodesis is an effective procedure for early stage II Kienböck disease prior to fragmentation and collapse of the lunate.

**Poster No. P0681**  
**Temporary Limited Wrist Arthrodesis Using a Dorsal Spanning Plate in Perilunate Dislocations**  
*Duc Nguyen, MD, Miami, FL*  
Tamara John, MD, New Haven, CT  
Seth D. Dodds, MD, Miami, FL

Temporary limited wrist arthrodesis with a dorsal spanning plate to augment the repair of perilunate dislocations maintains carpal stability while also allowing early loadbearing of the carpus.

**Poster No. P0682**  
**Reduction and Association of the Scapholunate Procedure as a Rescue Operation for Failed Primary Scapholunate Instability Surgery: 11-Year Follow Up**  
*Christina Freibott, BA, New York, NY*  
Samuel Galle, MD, New York, NY  
Melvin P. Rosenwasser, MD, New York, NY

The RASL procedure has been demonstrated to be an effective motion-sparing procedure both in the setting of primary, chronic SL instability and revision cases after failed primary treatment.

**Poster No. P0683**  
**Prognostic Factors of Arthroscopic Debridement for Central Triangular Fibrocartilage Complex Tears in Adults Younger than 45 Years: A Retrospective Case Series Analysis**  
*Young Hak Roh, Seoul, Republic of Korea*  
Seok Woo Hong, MD, Seoul, Republic of Korea

TFCC debridement appears to be helpful for patients with flap-type tears and less ulnar plus variance, but it has little favorable effect on those with wearing tears and greater ulnar plus variance.
Poster No. P0684
Epidemiology of Finger Amputations in the United States from 1997 to 2016
Daniel Reid, MD, MPH, Cranston, RI
Kalpit N. Shah, MD, Cranston, RI
Adam E. Eltora, Providence, RI
Christopher J. Got, MD, Providence, RI
Alan H. Daniels, MD, Providence, RI
The incidence of finger amputations is bimodal, with young children (<5) and those >65 years of age at greatest risk. Common mechanisms of injury vary according to age group.

Poster No. P0685
Malnutrition Increases the 30-Day Postoperative Complications after Distal Radius Fracture Surgical Fixation
Andrew Yang, MD, Brooklyn, NY
Frank S. Cautela, BS, Staten Island, NY
Alexander Chee, Brooklyn, NY
Marina Coste, BA, Brooklyn, NY
Anton Khlopas, MD, Elmwood Park, IL
Neil V. Shah, MD, MS, New York, NY
Karan Dua, MD, New York, NY
Steven Koehler, MD, New York, NY
Jared M. Newman, MD, Brooklyn, NY
Malnutrition, determined by hypoalbuminemia, may be seen in elderly distal radius fracture patients and is associated with longer length of stay and more postoperative complications and readmissions.

Poster No. P0686
Todd H. Alter, BS, Philadelphia, PA
Kristin Sandrowski, MD, Philadelphia, PA
Asif M. Ilyas, MD, Wayne, PA
Complication rate after locked volar plating of distal radius fractures is low, with tendon ruptures occurring well below 1% of the time.

Poster No. P0687
Biomechanical Comparison of Volar Locking Plates vs. Fragment-Specific Plates for AO B1 and B2 and Articular Shear Fractures of the Distal Radius
Andrew G. Park, MD, Philadelphia, PA
Dennis Martin, Philadelphia, PA
Christopher M. Jones, MD, Wayne, PA
Asif M. Ilyas, MD, Wayne, PA
For AO B2 (dorsal rim) fractures, dorsal plates performed better than volar locking plates. But for AO B1 (radial styloid) fractures, the volar and radial locking plates performed similarly.

Poster No. P0688
Are Patients Willing to Pay for Smaller Incisions or Faster Return to Work?
Aaron Alokozai, BS, Castro Valley, CA
Sarah E. Lindsay, Greenwood Village, CO
Sara L. Eppler, MPH, Redwood City, CA
Paige M. Fox, MD, PhD, Palo Alto, CA
Amy L. Ladd, MD, Redwood City, CA
Robin N. Kamal, MD, Redwood City, CA
Patients may be willing to pay out-of-pocket and cost share to some degree for procedures that lead to earlier return to work and smaller incisions in the setting of clinical equipoise.

Poster No. P0689
The Effect of Soft Tissue Hand Surgery on Periprosthetic Joint Infection after Total Joint Arthroplasty
Kevin Li, Stanford, CA
Sam Y. Jiang, BA, Palo Alto, CA
Matthew Burn, MD, Redwood City, CA
Robin N. Kamal, MD, Redwood City, CA
This study explores whether hand surgery affects periprosthetic joint infection risk in patients with recent hip or knee arthroplasty and whether antibiotic prophylaxis is indicated for these patients.

Poster No. P0690
The Clinical Utility of Maceration Dressings in the Treatment of Hand Infections: An Evaluation of Treatment Outcomes
Ajith Malige, MD, Bethlehem, PA
Vince W. Lands, MD, Bethlehem, PA
Kristofer S. Matullo, MD, Ambler, PA
The maceration dressing worked to decrease length of stay and antibiotic time but not the need for formal incision and drainage or infection recurrence rates.

Poster No. P0691
The Role of Insurance Type on the Presentation of Cubital Tunnel Syndrome
Christopher Cheng, BS, New Fairfield, CT
Craig M. Rodner, MD, Simsbury, CT
Publically insured patients are significantly delayed in seeking surgical evaluation for cubital tunnel syndrome and present with more severe clinical and electrodiagnostic findings.

Poster No. P0692
Patient-Reported Outcome Measurement Information System (PROMIS) Scores are Not Biased Based on Setting: Patient Care Versus Clinical Study Scenarios
David Bernstein, MA, MBA, Rochester, NY
Bilal Mahmood, MD, Rochester, NY
Warren C. Hammert, MD, Rochester, NY
The setting in which patients complete PROMIS questionnaires (e.g., study scenario vs. hand clinic) does not bias PROMIS scores regardless of if they are informed it is for study purposes or not.

Poster No. P0693
Neil Y. Li, MD, Providence, RI
Justin E. Kleiner, BS, Providence, RI
Christopher J. Got, MD, Providence, RI
This study evaluated a national inpatient database to find a decline in the use of nerve suture repair and increase in use of nerve graft repair for upper extremity peripheral nerve injuries.

Poster No. P0694
Cost Analysis of Trigger Finger Release Performed in Clinic versus in the Operating Room
TJ France, BS, Columbus, OH
Sonu A. Jain, MD, Columbus, OH
Kanu S. Goyal, MD, Columbus, OH
We retrospectively reviewed over 500 patients having undergone trigger finger release to calculate the cost of performing this procedure in clinic compared to in the operating room.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0695
Muscle Derived Stem Cell Augmented Scaffolds are Capable of Enhanced Healing in a Critical Sized Volumetric Muscle Defect
Howard Wang, MD, Baltimore, MD
David E. Kurlander, MD, Cleveland, OH
Denver Lough, MD, PhD, Salt Lake City, UT
Joseph H. Lopez, MBA, MD, Baltimore, MD
Kevin J. Malone, MD, Cleveland, OH
Anand R. Kumar, MD, Cleveland, OH
Muscle derived stem cell augmented scaffolds significantly improved skeletal muscle regeneration in a murine muscle defect model when compared to control and scaffold-only groups.

Poster No. P0696
A Case Series of Osteointegration Implant for the Transfemoral Amputation Level
Ronald Hillock, Las Vegas
Daniel C. Allison, MD, Studio City, CA
Diane Han, MD, Las Vegas, NV
S. R. Rozbruch, MD, New York, NY
The authors report on a novel osteointegration implant used for transfemoral level amputation, a case series of 7 patients treated to a custom OI implant.

Poster No. P0697
Osteoid Osteomas of the Hip: A Well-Recognized Entity with a Proclivity for Misdiagnosis
Meagan E. Tibbo, MD, Rochester, MN
Graham Pailante, MD, Rochester, MN
Rafael J. Sierra, MD, Rochester, MN
Timothy Welch, Rochester, MN
Matthew T. Houdek, MD, Rochester, MN
Doris Wenger, MD, Rochester, MN
Diagnosing osteoid osteomas of the hip can be challenging. Awareness of the characteristic marrow edema on MRI, and utility of CT in adolescent patients are critical for making an accurate diagnosis.

Poster No. P0698
Antiproliferative Effect of a Non-Steroidal Anti-Inflammatory Drug Zaltoprofen on Chondrosarcoma Growth via Activating Peroxisome Proliferator-Activated Receptor Gamma and p21
Takashi Higuchi, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kentaro Igarashi, MD, PhD, Kanazawa, Japan
Kensaku Abe, MD, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
This study demonstrated that zaltoprofen, an NSAID, inhibits tumor progression with p21 upregulation in vivo and in vitro by targeting PPAR.

Poster No. P0699
Palovarotene, the Selective Agonist for Nuclear Retinoic Acid Receptor Gamma, Inhibits Glycosaminoglycan Production and Decreases Tumor Mass Size in a Chondrosarcoma Cell Line Both In Vitro and In Vivo
William Shield, MD, Baltimore, MD
Yang Dan, Baltimore, MD
AshleyCellini, PA, Baltimore, MD
Masaharu Takigawa, DDS, PhD, Okayama, Japan
Masahiro Iwamoto, DDS, PhD, Baltimore, MD
Motomi Enomoto-Iwamoto, Baltimore, MD
Vincent Y. Ng, MD, Reisterstown, MD
Palovarotene, a RARγ agonist, inhibits glycosaminoglycan production and decreases tumor mass size in a chondrosarcoma cell line in vitro and in vivo.

Poster No. P0700
Predicting Survival in Localized Chondrosarcoma
Alexander L. Lazarides, MD, Durham, NC
David Kerr, BA, Durham, NC
Sneha R. Rao, BS, Durham, NC
Whitney Lane, MD, Durham, NC
Jason Somarelli, Durham, NC
Dan Blazer, MD, Durham, NC
Brian E. Brigm, MD, PhD, Durham, NC
Will Eward, DVM, MD, Durham, NC
The most important factors prognostic of survival were lower tumor grade and younger age. Surgery with a positive margin was significantly associated with death from disease.

Poster No. P0701
Predictors of Survival after Intramedullary Fixation of Completed and Impending Pathologic Femur Fractures from Osseous Metastasis
Jad El Abiad, BS, Baltimore, MD
Ronak N. Kotian, MBBS, Baltimore, MD
Varun Puvanesarajah, MD, Baltimore, MD
Sandesh Rao, MD, Baltimore, MD
Carol D. Morris, MD, MS, Baltimore, MD
Adam S. Levin, MD, Baltimore, MD
Various clinical and demographic factors that determine survival time after IMN for impending or completed pathologic femur fractures were assessed in this retrospective study.

Poster No. P0702
Orthopaedic Oncology and Preoperative Counseling: What Influences the Patient’s Choice Between Limb Salvage and Amputation?
Richard W. Gurich, MD, Greenville, SC
Matthew Thompson, MD, Seattle, WA
Christopher Johnson, DO, Fort Wayne, IN
Stephanie Punt, MA, Lawrence, KS
Michael Namekata, MA, Lawrence, KS
Amy M. Cizik, MPH, PhD, Seattle, WA
Ellie Brewer, MPH, Seattle, WA
Rebecca Symons, Seattle, WA
This study sought to examine the effect of specific biases on patient decision making in the context of orthopaedic oncology, namely the choice between amputation and limb salvage.
Poster No. P0703
Skeletal Muscle Wasting-Related Ligase, Muscle RING-Finger Protein-1, Promotes Malignancy via the Activation of Cancer Stemness Characteristics in Bone Tumors
Chen-Yuan Chiu, Taipei, Taiwan
Rong-Sen Yang, MD, Taipei, Taiwan
Shing-Hwa Liu, PhD, Taipei, Taiwan
Muscle atrophy-related MuRF-1 induces tumorigenic malignancy via the activated cancer cell stemness in osteosarcomas / chondrosarcomas. Sarcopenia may be a malignant etiology in bone tumor progression.

Poster No. P0704
Impacts of Surgery and Surgical Procedures to the Leg Length Discrepancy in Pediatric Osteosarcoma Patients
Yuta Taniguchi, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kensaku Abe, MD, Kanazawa, Japan
Takashi Higuchi, Kanazawa, Japan
Hiroyuki Inatani, MD, Kanazawa, Japan
Yoshihiro Araki, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Department of Orthopaedic Surgery Graduate School of Medical Science Kanazawa University
Patients with osteosarcoma of femur may experience severe postoperative leg length discrepancy. Use of prosthesis in distal femur causes shortening of the tibial length.

Poster No. P0705
Results of Total Femoral Replacement in Primary vs. Revision Reconstruction; A Multicenter Study Investigating Survivorship, Clinical Outcomes, and Complications
Assem Sultan, MD, Cleveland, OH
Mohamed A. Yakoub, MD, MSc, New York, NY
Jared M. Newman, MD, Brooklyn, NY
Nicolas S. Piuuzzi, MD, Shaker Heights, OH
Linsen T. Samuel, MBA, MD, Floral Park, NY
Viktor Erik Krebs, MD, Rocky River, OH
Robert M. Molloy, MD, Avon Lake, OH
Arthur L. Malkani, MD, Louisville, KY
Martin Buttaro, MD, Buenos Aires, Argentina
Ronald E. Delanois, MD, Baltimore, MD
Patrick J. Boland, MD, New York, NY
John H. Healey, MD, M, New York, NY
Michael A. Mont, MD, New York, NY
Orthopaedic Oncology Study Group
Patients who receive TFR prosthesis as a primary reconstruction demonstrated higher mortality when compared to those who underwent revision reconstruction, likely related to their oncologic diagnosis.

Poster No. P0706
Rapid 3D Printing of Anatomically Shaped Bone Scaffolds Using Novel Molding and Perfusion Techniques
Brian E. Grottkau, MD, Boston, MA
Zhixin Hui, Boston, MA
Yonggang Pang, Boston, MA
We have developed a novel technique for rapid 3D printing of anatomically shaped bone scaffolds using a novel molding and perfusion technique to create patient specific structural bone grafts.

Poster No. P0707
Revitalization of Recycled Frozen Bone Grafts Using Adipose-Derived Stem Cells
Yu Aoki, Kanazawa, Japan
Norio Yamamoto, MD, Kanazawa, Japan
Katsuhiro Hayashi, MD, Kanazawa, Japan
Akihiko Takeuchi, MD, Kanazawa, Japan
Shinji Miwa, MD, Ishikawa, Japan
Kensaku Abe, MD, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hirotaka Yonezawa, MD, Kanazawa, Japan
Takashi Higuchi, Kanazawa, Japan
Kensaku Abe, MD, Kanazawa, Japan
Yuta Taniguchi, Kanazawa, Japan
Hirotaka Yonezawa, MD, Kanazawa, Japan
Yoshihiro Araki, MD, Kanazawa, Japan
Naotoshi Sugimoto, PhD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan
Department of Orthopaedic Surgery Graduate School of Medical Science Kanazawa University
Our results demonstrate the promotion of osteoblast proliferation and differentiation and osteogenesis using ADSCs. This study also suggests the promotion of frozen bone revitalization using ADSCs.

Poster No. P0708
Sarcoma Unplanned Excisions: Why Do They Keep Occurring?
Ana C. Belzarena Genovese, MD, Tampa, FL
Nicholas Zamith, BS, Tampa, FL
Nora E. Watson, PA-C, Tampa, FL
Odion T. Binitie, MD, Tampa, FL
John Mullinax, MD, Tampa, FL
G. D. Letson, MD, Tampa, FL
David Joyce, MD, Apollo Beach, FL
Unplanned excisions occur frequently despite literature supporting the referral of patients with soft tissue neoplasms to high volume centers for management.

Poster No. P0709
Bacterial Speciation and Analysis of Infections after Resection of Soft Tissue Sarcomas
Duncan Ramsey, MD, MPH, Portland, OR
Jason Weiss, Lake Oswego, OR
Wyatt J. Hayden, Lake Oswego, WA
James B. Hayden, Lake Oswego, OR
Yee-Cheen Dought, MD, Portland, OR
A retrospective speciation of 65 surgical site infections after soft tissue sarcoma resections. Anaerobic infections were common and presented significantly later than non-an aerobic infections.

Poster No. P0710
Impact of Radiation Dose and Method of Delivery on Survival in Chordomas
Brian L. Dial, MD, Durham, NC
David Kerr, BA, Durham, NC
Alexander L. Lazarides, MD, Durham, NC
Anthony A. Catanzano, MD, Durham, NC
Whitney Lane, MD, Durham, NC
Dan Blazer, MD, Durham, NC
Melissa M. Erickson, MD, Chapel Hill, NC
Sergio A. Mendoza-Lattes, MD, Durham, NC
The role of radiotherapy is unclear in axial chordomas. Improved 5-year survival was observed with high dose radiotherapy. Stereotactic and proton beam radiotherapy improved 5-year survival rates.
Poster No. P0711

A Rabbit Model for Physiologic Function in Bladder Exstrophy: Resection of the Pubic Symphysis Leads to Progressive Deformation of the Pelvic Skeleton

Walter B. Klyce, BA, Baltimore, MD
Ethan Cottrill, Baltimore, MD
Derek T. Nhan, BS, Baltimore, MD
Casey L. Kissel, DVM, Salt Lake City, UT
Carolin M. Garrett, DVM, Salt Lake City, UT
Nikolai Sopko, MD, PhD, Baltimore, MD
Matthew Kaspronski, MD, Baltimore, MD
Heather Di Carlo, Baltimore, MD
Paul D. Sponseller, MD, Baltimore, MD

In a novel model for bladder exstrophy, transecting the pubic symphysis of newborn rabbits led to progressive diastasis, suggesting that the symphyseal ligaments play a role in guiding pelvic growth.

Poster No. P0712

Postoperative Pain Control and Medication Usage in Pediatric Patients Following Operative Treatment of Supracondylar Humerus Fractures: Are We Still Overprescribing Opioids?

Matthew Stillwagon, MD, Carrboro, NC
Shawn Feinstein, MD, Durham, NC
Elizabeth Byrd Q. Nichols, Chapel Hill, NC
Paul N. Andrews, MS, Charlotte, NC
Anna D. Vergun, MD, Chapel Hill, NC

Children have historically been overprescribed opioids. Adequate pain control can likely be achieved with acetaminophen and ibuprofen following operative treatment of supracondylar humerus fractures.

Poster No. P0713

Comparison of Three Pediatric Pelvic Osteotomies for Acetabular Dysplasia using Patient Specific 3D Printed Models

Jason Caffrey, MS, La Jolla, CA
Megan Jeffords, MS, San Diego, CA
Christine L. Farnsworth, MS, San Diego, CA
James D. Bomar, San Diego, CA
Vidyadhar V. Upasani, MD, San Diego, CA

By performing mock surgeries on patient-specific 3D printed models, we found differences in acetabular octant coverage angles and version between three pelvic osteotomies for DDH.

Poster No. P0714

Evaluating the Use of an Electronic Inclinometer in Correcting Rotational Disorders of the Hip in Children

Ishaan Swarup, MD, New York, NY
Christine Goodbody, MD, New York, NY
Elizabeth Gausden, MD, New York, NY
Douglas N. Mintz, MD, Katonah, NY
David M. Scher, MD, New York, NY
Roger F. Widmann, MD, New York, NY

The accuracy of derotation osteotomies can be improved with the use of an electronic inclinometer, especially when performing corrections of larger magnitude.

Poster No. P0715

Fibula Osteotomy Techniques: Limb Lengthening and Reconstruction Society Survey Results

Christopher A. Iobst, MD, Columbus, OH
Mikhail Samchukov, MD, Dallas, TX
Alexander Cherkashin, MD, Dallas, TX

Based on the responses of 151 limb deformity surgeons, the basic characteristics of the fibula osteotomy are detailed for the first time in the literature.

Poster No. P0716

Os Subfibulare as a Posttraumatic Sequela of Pediatric Ankle Trauma

James G. Gamble, MD, PhD, Stanford, CA

This study provides evidence for the posttraumatic theory of origin of at least some OSF, particularly those forming after tip avulsion or anterior chip fractures of the fibula in children.

Poster No. P0717

Developmental Pattern of the Greater Trochanter in Skeletally Immature Patients

Derrick Knapik, MD, Cleveland, OH
Conor F. McCarthy, BS, Oneida, NY
Raymond W. Liu, MD, Cleveland, OH

Antegrade intramedullary nailing appears safe after age 7 in males and females following cessation of growth of the cartilage cap, while the greater trochanter continues to grow until age 10.

Poster No. P0718

How Successful are Percutaneous Techniques in Correcting Equinus in Patients with Cerebral Palsy?

David A. Yngve, MD, Galveston, TX
Edward Butt, Austin, TX

This series provides information on the effect of preoperative deformity and age on the ability to achieve equinus correction with percutaneous methods.

Poster No. P0719

Characteristics and Hospital Cost of Abuse-Related Femoral Fractures in Children Under One Year of Age

Jigar S. Gandhi, Voorhees, NJ
Mahmoud Abo Elmaged, Sohag, Egypt
Divya Talwar, MPH, Philadelphia, PA
Jack M. Flynn, MD, Philadelphia, PA
Alexandre Arkader, MD, Philadelphia, PA

The average per-patient hospital cost of treating an abuse-related fracture is 3 times higher than the cost of treating a fracture resulting from an accidental trauma ($31,123 vs. $10,370).

Poster No. P0720

Patient-Reported Outcomes after Operative versus Nonoperative Treatment of Pediatric Lateral Humeral Condyle Fractures

Derek T. Nhan, BS, Baltimore, MD
Barry Bryant, BS, Columbus, OH
Paul D. Sponseller, MD, Baltimore, MD
Rushyuan J. Lee, MD, Baltimore, MD

For pediatric lateral humeral condyle fractures, open reduction had better appearance and patient outcomes vs. percutaneous reduction. Neither op vs. nonop nor K-wire vs. screw fixation impacted outcomes.
Poster No. P0721
Can Residual Extension be Accepted in the Treatment of Type II Supracondylar Humerus Fractures in Children?

Mauricio Silva, MD, Los Angeles, CA
Enin M. Delfosse, NP, Los Angeles, CA

The nonoperative treatment of type II SCHF can result in RE in a small subset of fractures. Despite the presence of RE, relatively normal values of range of motion can be expected.

Poster No. P0722
The Effect of Intraoperative Fracture Injection with Bupivacaine and IV Acetaminophen on Postoperative Opioid Use when Treating Pediatric Supracondylar Fractures

Kelvin Kim, Lake Forest, CA
Douglas G. Armstrong, MD, Hershey, PA
William L. Hennrikus, MD, Hershey, PA

Opioid use is reduced by a hematoma block and IV acetaminophen in children with displaced supracondylar fractures.

Poster No. P0723
Automated Noninvasive Detection of Idiopathic Scoliosis in Children and Adolescents: A Principle Validation Study

Hideki Sudo, MD, Sapporo, Japan
Terufumi Kokabu, MD, Sapporo, Japan
Yuichiro Abe, MD, PhD, Eniwa, Japan
Akira Iwata, MD, Sapporo, Japan
Katsuhiro Yamada, MD, Sapporo, Japan
Norimasa Iwasaki, Sapporo, Japan

The system three-dimensionally scans multiple points on the back, enabling an automated evaluation of the back's asymmetry in a few seconds. This principle validation study demonstrated excellent agreement with definitive and exclusive diagnoses.

Poster No. P0724
Do Patients with Less than Ideal Outcomes at Two Years Continue to Have Suboptimal Outcomes in the Long-Term Following Surgery of Adolescent Idiopathic Scoliosis?

Jessica Hughes, MD, Temple, TX
Burt Yaszay, MD, San Diego, CA
Tracey Bastrom, MA, San Diego, CA
Stefan Parent, MD, Montreal, QC, Canada
Patrick J. Cahill, MD, Philadelphia, PA
Baron Lonner, MD, New York, NY
Suken A. Shah, MD, Wiltminton, DE
Amer Samdani, MD, Philadelphia, PA
Peter O. Newton, MD, San Diego, CA

Despite signs of suboptimal outcomes 2 years following surgical correction for adolescent idiopathic scoliosis, many cases can anticipate improvement in the clinical deformity and patient reported outcomes.

Poster No. P0725
Monitoring Progression of Adolescent Idiopathic Scoliosis with Scoliometer Readings

Aaron Beck, MD, Redondo Beach, CA
David L. Skagg, MD, Los Angeles, CA
Liam R. Harris, MD, Torrance, CA
Priscella Chan, Los Angeles, CA
Austin Sanders, BA, New York, NY
Lindsay M. Andras, MD, Los Angeles, CA

If a less than 10 degree change in curve magnitude will not change treatment decisions, the scoliometer may be a useful adjunct to decrease radiation in monitoring AIS.

Poster No. P0726
Intraoperative CT-Guided Navigation for Pediatric Spine Patients Reduced Return to Operating Room for Screw Malposition Compared to Free/Fluoroscopic Techniques

Fady Baky, Columbus, OH
Todd A. Milbrandt, MD, Rochester, MN
Scott R. Echternacht, BA, Rochester, NY
Anthony A. Stans, MD, Rochester, MN
William J. Shaughnessy, MD, Rochester, MN
A. Noelle Larson, MD, Rochester, MN

Use of CT-guided navigation resulted in fewer severely malpositioned screws and lower rates of return to OR due to screw malposition than fluoroscopy/freehand screw placement.

Poster No. P0727
The Role of Traditional Growing Rods in the Era of Magnetically-Controlled Growing Rods for the Treatment of Early-Onset Scoliosis

Eric Varley, DO, San Diego, CA
Burt Yaszay, MD, San Diego, CA
Jeff Pawelek, San Diego, CA
Gregory M. Mundis, MD, San Diego, CA
Matthew E. Oetgen, MD, Chevy Chase, MD
Peter F. Sturm, MD, Cincinnati, OH
Behrooz A. Akbarnia, MD, San Diego, CA
Growing Spine Study Group

The most common indications for TGR in lieu of MCGCR was degree of sagittal deformity and short trunk. These criteria provide guidance for the continued role TGR has in the MCGCR era.

Poster No. P0728
Vertebra Plana in Pediatric Patients: More than just Eosinophilic Granuloma?

Fady Baky, Columbus, OH
Todd A. Milbrandt, MD, Rochester, MN
Matthew T. Houdek, MD, Rochester, MN
A. Noelle Larson, MD, Rochester, MN

A number of etiologies caused pediatric vertebra plana. Pain, spinal location, the degree and symmetry of collapse were not predictive of a diagnosis of eosinophilic granuloma.

Poster No. P0729
Perfusion of the Femoral Head During Surgical Hip Dislocation through a Modified Direct Lateral Approach: Real-Time Doppler Flowmetry Monitoring

David P. Brigati, MD, University Heights, OH
Mohamad J. Halawi, MD, Farmington, CT
Peter J. Brooks, MD, Cleveland, OH

Surgical hip dislocation through a modified direct lateral approach preserves blood flow to the femoral head in vivo, confirming prior cadaveric findings and avoiding trochanteric osteotomy morbidity.

Poster No. P0730
Demographics of Pediatric and Adolescent Patients with Discoid Menisci

 Nirav K. Pandya, MD, Oakland, CA
Sean P. Robinson, MD, Oakland, CA
Jarrad A. Merriman, MD, MPH, Orinda, CA

Unlike prior studies, the majority of patients with discoid menisci were Hispanic or Caucasian. Although congenital, the majority of patients presented with a short duration of symptoms.
Avascular Necrosis After Slipped Capital Femoral Epiphysis: Clinical Presentation and Outcomes of Treatment: A 30-Year Experience

James Wylie, MD, Jamaica Plain, MA
Marina V. Ferrer, MD, Brasilia, Brazil
Michael McClincy, MD, Boston, MA
Travis H. Matheny, MD, Boston, MA
Young Jo Kim, MD, PhD, Boston, MA
Eduardo N. Novais, MD, Boston, MA
Michael B. Millis, MD, Boston, MA

We report a series of patients who developed AVN after SCFE. Functional outcomes and failures are investigated. We found that the amount of the epiphysis involved is the main predictor of outcome.

Poster No. P0735

Implementation of an Achilles Tendon Stretching Protocol in Youth Basketball Athletes Increases Flexibility Without Decreasing Injury Rate

Derrick Knapik, MD, Cleveland, OH
Allison Gilmore, MD, Shaker Heights, OH
Michael J. Salata, MD, Cleveland, OH
James E. Voos, MD, Cleveland, OH
Raymond W. Liu, MD, Cleveland, OH

Prospective analysis of routine Achilles tendon stretching in pediatric basketball athletes resulted in a modest increase in flexibility over the course of a season compared to age-matched controls.

Poster No. P0736

Avascular Necrosis After Slipped Capital Femoral Epiphysis: Clinical Presentation and Outcomes of Treatment: A 30-Year Experience

James Wylie, MD, Jamaica Plain, MA
Marina V. Ferrer, MD, Brasilia, Brazil
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Travis H. Matheny, MD, Boston, MA
Young Jo Kim, MD, PhD, Boston, MA
Eduardo N. Novais, MD, Boston, MA
Michael B. Millis, MD, Boston, MA

We report a series of patients who developed AVN after SCFE. Functional outcomes and failures are investigated. We found that the amount of the epiphysis involved is the main predictor of outcome.
Poster No. P0741
No Difference in Total Episode-of-Care Cost between Staged and Simultaneous Bilateral Total Joint Arthroplasty
Jessica Phillips, MD, Philadelphia, PA
Alexander Rondon, MD, Philadelphia, PA
Zylyftar Gorica, BS, Philadelphia, PA
Yale Fillingham, MD, Hanover, NH
Matthew Austin, MD, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

In the Medicare population, there is no difference in 90-day episode-of-care costs between simultaneous and staged bilateral THA and TKA procedures.

Poster No. P0742
Patterns and Cost of 90-Day Readmission Following Total Hip and Knee Arthroplasty
Ran Schwarzkopf, MD, New York, NY
Omar A. Behery, MD, New York, NY
Leora Horwitz, MD, New York, NY
Li Li, New Haven, CT
Lisa G. Suter, MD, New Haven, CT

Given the significant costs, and observed patterns of readmissions related to surgical complications, quality improvement initiatives may be tailored to address early surgical readmissions.

Poster No. P0743
Predicting Costs Exceeding Bundled Payment Targets for Total Knee Arthroplasty
Sean P. Ryan, MD, Durham, NC
Daniel Goltz, MBA, MD, Durham, NC
Claire B. Howell, Durham, NC
David E. Attarian, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

A novel predictive model of comorbidities and demographics is able to predict excess cost of care within bundled payment models.

Poster No. P0744
Skilled Nursing Facilities: The Time for Selective Partnerships is Now!
Sean P. Ryan, MD, Durham, NC
Daniel Goltz, MBA, MD, Durham, NC
Claire B. Howell, Durham, NC
David E. Attarian, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Skilled nursing facility discharges dramatically increase cost of care after total knee arthroplasty in a bundled system; however, select facilities may disproportionately impact reimbursement.

Poster No. P0745
A Nurse Navigator Program is Effective in Reducing Episode-of-Care Costs Following Primary Hip and Knee Arthroplasty
Alexander Rondon, MD, Philadelphia, PA
Yale Fillingham, MD, Hanover, NH
David A. Janiec, MBA, Philadelphia, PA
Christina Vannello, BSN, Philadelphia, PA
Matthew Austin, MD, Philadelphia, PA
Paul M. Courtney, MD, Philadelphia, PA

A nurse navigator program resulted in marked reduction in episode-of-care costs following primary THA and TKA with cost savings far outweighing the added salary expense of the navigators.

Poster No. P0746
Improving Outcomes and Reducing Costs for Total Shoulder Arthroplasty with Bundled Payments
Randall Otto, MD, Fenton, MO
Betsy Engle, PhD, Saint Louis, MO
Snehal Kulkarni, MBA, MPH, Saint Louis, MO
Deborah M. Young, MBA, Saint Louis, MO
Renee Nelson, St Louis, MO

The implementation of care redesign strategies improves outcomes and reduces costs through bundled payments for total shoulder arthroplasty.

Poster No. P0747
Lessons Learned After Three Years in Bundled Payments: Tales From a Privademic Practice
Susan M. Odum, PhD, Charlotte, NC
Brian M. Curtin, MD, Charlotte, NC
James G. Hendrix, MD, Concord, NC
Virginia F. Casey, MD, Charlotte, NC
Brian A. Krenzel, MD, Hickory, NC
Paul F. Rush, MD, Laurantburg, NC
Bradley S. Ellison, MD, Concord, NC
Scott A. Burbank, MD, Charlotte, NC
Bryan J. Loeffler, MD, Charlotte, NC
Charles V. Sikes, MD, Mooresville, NC
Paul B. Segebarth, MD, Charlotte, NC
Scott B. O’Neal, MD, Charlotte, NC
Dana P. Piasecki, MD, Charlotte, NC
Todd A. Irwin, MD, Charlotte, NC
Bruce A. Cox, MD, Shelby, NC
Stephanie Sheets, RN, Charlotte, NC
Leo R. Specter, MD, Charlotte, NC

Over three years, our privademic practice successfully decreased the utilization of postacute health services, simultaneously reduced readmission rates, and realized significant savings through BPCI.

Poster No. P0748
The Impact of Medical Education on Patient Satisfaction: An Asset or a Liability?
Sean P. Ryan, MD, Durham, NC
Samuel S. Wellman, MD, Durham, NC
William A. Jiranek, MD, Durham, NC
David E. Attarian, MD, Durham, NC
Michael P. Bolognesi, MD, Durham, NC
Thorsten M. Seyler, MD, PhD, Durham, NC

Patient satisfaction scores are not significantly impacted by medical trainee involvement in patient care.

Poster No. P0749
Personalized Treatment Recommendations Based on an Objective Biomechanical Assessment Improves Pain, Function, and Treatment Satisfaction in Knee Osteoarthritis Patients Non-Eligible for Arthroplasty: A Pragmatic Cluster Randomized Controlled Trial
Alix Cagnin, MSc, Montreal, QC, Canada
Manon Choinière, Montreal, QC, Canada
Nathalie Bureau, MD, MSc, Montreal, QC, Canada
Alex Fuentes, PhD, Montreal, QC, Canada
Pierre Ranger, FRCS (Ortho), MD, Montreal, QC, Canada
Nicola Hagemeister, PhD, Montreal, QC, Canada

Personalized treatment recommendations based on an objective biomechanical assessment improves pain, function, and treatment satisfaction in knee osteoarthritis patients non-eligible for arthroplasty.

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**Poster No. P0750**  
Virtual Scribe Services are Associated with Higher Physician Satisfaction than Traditional Documentation  
*Kamran S. Hamid, MD, MPH, Chicago, IL*  
*Timothy C. Keating, MD, Chicago, IL*  
*Daniel D. Bohl, MD, MPH, Chicago, IL*  
*Benedict U. Nwachuku, MD, MBA, New York, NY*  

Use of a virtual scribe service was associated with high physician satisfaction in all tested domains and was preferred over traditional documentation in this cohort of 193 orthopaedic surgeons.

**Poster No. P0751**  
Risk Optimization Contributes to Widening Disparity Gap in Orthopaedic Surgery  
*Abigail L. Campbell, MD, New York, NY*  
*Alshin Anoushiravani, MD, New York, NY*  
*Chantel Gordon, BA, MS, Bronx, NY*  
*Lidia Ani, Bay Shore, NY*  
*Claudette M. Lajam, MD, New York, NY*  

Review of orthopaedic public insurance clinic reveals that one third of scheduled cases are cancelled; most commonly for preoperative clearance. Outer borough patients were greatly affected.

**Poster No. P0752**  
Single vs. Multiple Doses of Prophylactic Antibiotics in Orthopaedic Surgery: A Meta-Analysis  
*Sean P. Ryan, MD, Durham, NC*  
*Beau J. Kildow, MD, Durham, NC*  
*Timothy Tan, MD, Philadelphia, PA*  
*Michael P. Bolognesi, MD, Durham, NC*  
*Javad Parvizi, MD, FRCS, Philadelphia, PA*  
*Thorsten M. Seyler, MD, PhD, Durham, NC*  

Meta-analysis of randomized controlled trials for single vs. multiple doses of antibiotic prophylaxis for surgeries where implants are utilized.

**Poster No. P0753**  
Opioid Consumption Following Total Joint Arthroplasty: Patient Characteristics and Number of Pills Consumed  
*Philip Huang, DO, San Diego, CA*  
*Steven Copp, MD, La Jolla, CA*  

Opioids were significantly over-prescribed following total joint arthroplasty. Patients undergoing TKA require significantly more oral pain medications and prescription refills compared to THA.

**Poster No. P0754**  
Incidence of Staphylococcus aureus Infection after Elective Orthopaedic Surgeries in United States Hospitals  
*Jill Dreyfus, MPH, PhD, Charlotte, NC*  
*Holly Yu, MSPH, Collegeville, PA*  
*Elizabeth Begier, MD, MPH, Pearl River, NY*  
*Alvaro Quintana, MD, MSc, Westfield, NJ*  
*Julie A. Gayle, Charlotte, NC*  
*Margaret Olsen, MPH, PhD, Saint Louis, MO*  

This study of the Premier Healthcare Database assessed 180-day S. aureus incidence after a variety of elective orthopaedic surgeries in real-world US inpatient and outpatient hospital settings.

**Poster No. P0755**  
Are Patients with Osteoporosis and a History of Hip Fracture Receiving Adequate Calcium and Vitamin D Supplementation?  
*Evan D. Nigh, BA, Miami, FL*  
*Spencer Summers, MD, Miami, FL*  
*Duc Nguyen, MD, Miami, FL*  
*Sheila A. Conway, MD, Miami, FL*  

This NHANES study identifies the prevalence and likelihood of inadequate calcium and vitamin D supplementation among osteoporotic individuals with a focus on those with history of hip fracture.

**Poster No. P0756**  
An Evidence-Based Blood Management Protocol Decreases Transfusion Rates following Total Joint Arthroplasty  
*Claudette M. Lajam, MD, New York, NY*  
*Khalid I. Odeh, MD, San Francisco, CA*  
*Russell Odono, MD, Santa Clarita, CA*  
*Stephen Yu, MD, New York City, NY*  
*Jessica Hooper, MD, New York, NY*  
*Lorraine Hutzler, BA, New York, NY*  
*Joseph A. Bosco III, MD, New York, NY*  

RBC transfusion can impede expeditious recovery by prolonging hospital stay, increasing the risk of surgical site infection, delaying mobilization, and exposing patients to potential reactions.

**Poster No. P0757**  
What Factors Influence an Orthopaedic Surgeons Online Rating? A Large-Scale, Retrospective Analysis  
*Parth Desai, BS, Columbus, GA*  
*Dustin Morgan, MD, Carrollton, GA*  
*Luther H. Wolff, MD, Columbus, GA*  

The purpose of this study is to investigate factors affecting the mean online ratings of orthopaedic surgeons through retrospective analysis of a nationwide online review database.

**Poster No. P0758**  
Characteristics and Predictors of Telephone Communication in the Perioperative Period of Total Knee Arthroplasty  
*Mathew Kheir, BS, Philadelphia, PA*  
*Timothy Tan, MD, Philadelphia, PA*  
*Alexander Rondon, MD, Philadelphia, PA*  
*Vincenzo Bonaddio, Garnet Valley, PA*  
*James J. Purtill, MD, Philadelphia, PA*  
*Paul M. Courtney, MD, Philadelphia, PA*  

The most common reasons for phone communication for patients undergoing TKA are preoperative care instructions and medication concerns.

**Poster No. P0759**  
Risk Adjustment for Episode-of-Care Costs following Total Joint Arthroplasty: Costs of Comorbidities  
*Yale Fillingham, MD, Hanover, NH*  
*Alexander Rondon, MD, Philadelphia, PA*  
*Jessica Phillips, MD, Philadelphia, PA*  
*Matthew Austin, MD, Philadelphia, PA*  
*Christina Vannello, BSN, Philadelphia, PA*  
*David A. Janiec, MBA, Philadelphia, PA*  
*Paul M. Courtney, MD, Philadelphia, PA*  

Providers participating in alternative payment models should be aware of factors associated with increased costs to better anticipate patient needs.
Poster No. P0760
Early Weight-Bearing Improves Cartilage Repair in an In Vitro Model Mimicking Rehabilitation after Microfracture Surgery
Tomoya Iseki, MD, Pittsburgh, PA
Riccardo Gottardi, PhD, Pittsburgh, PA
Shinsuke Kihara, MD, PhD, Pittsburgh, PA
Benjamin Rothrauff, MD, PhD, Pittsburgh, PA
Shinichi Yoshiba, MD, Nishinomiya, Japan
Freddie H. Fu, MD, Pittsburgh, PA
Rocky S. Tuan, PhD, Pittsburgh, PA

This study demonstrated early weight-bearing in rehabilitation after microfracture could be beneficial in promoting the formation of more hyaline-like cartilage repair tissue.

Poster No. P0761
Discussing Cost at Time of Surgery Scheduling is Feasible and Desired by Patients
Laura Lu, Stanford, CA
Lauren M. Shapiro, MD, Palo Alto, CA
Sara L. Eppler, MPH, Redwood City, CA
Rajneesh Behal, MD, MPH, Palo Alto, CA
Robin N. Kamal, MD, Redwood City, CA

Patients, especially those with high annual deductibles and out of pocket costs, are interested in discussing cost prior to surgical treatment and find such discussions useful and easy-to-understand.

Poster No. P0762
Impact of Platelet-Rich Plasma Use on Pain in Orthopaedic Surgery: A Systematic Review and Meta-Analysis
Herman Johal, MD, Waterdown, ON, Canada
Moin Khan, FRCS, MD, Burlington, ON, Canada
Patrick S. Yung, MD, Shatin, Hong Kong
Mandeep S. Dhillion, Prof, Chandigarh, India
Asheesh Bedi, MD, Ann Arbor, MI
Mohit Bhandari, MD, FRCS, Hamilton, ON, Canada

A systemic review investigating the efficacy of using platelet-rich plasma in musculoskeletal applications for pain and injury management.

Poster No. P0763
Nonoperative Treatments for Knee Osteoarthritis: Are they Equally Effective?
Christopher Vannabosathong, MSc, Burlington, ON, Canada
Mohit Bhandari, MD, FRCS, Hamilton, ON, Canada
Asheesh Bedi, MD, Ann Arbor, MI
Vikas Khanna, MD, Hamilton, ON, Canada
Patrick S. Yung, MD, Shatin, Hong Kong
Vijay D. Shetty, MS, Powai Mumbai, India
Moin Khan, FRCS, MD, Burlington, ON, Canada

A systemic review comparing different nonoperative management options in knee osteoarthritis.

Poster No. P0764
Prevalence of Musculoskeletal Disorders Among Shoulder and Elbow Surgeons
Saad Al-Gahtani, MD, London, ON, Canada
Mohammad M. Alzahrani, MBBS, MSc, Montreal, QC, Canada
David Pitchara, MD, Kingston, ON, Canada
Ryan T. Bicknell, MD, Kingston, ON, Canada

This study is the first to assess MSK injuries sustained by upper extremity surgeons. A high proportion of surgeons reported MSK injuries. The most common diagnoses were upper extremity tendinitis (shoulder and elbow) and back/neck pain. One quarter of surgeons were complaining of back and neck pain.

Poster No. P0765
The Most Efficacious Route of Tranexamic Acid Administration in Total Joint Arthroplasty: A Systematic Review and Network Meta-Analysis
Sheng Xu, MBBS, MRCS, Singapore, Singapore
Yongqiang Jerry Chen, MBBS, Singapore, Singapore
Qi Shi Zheng, MBBS, Singapore, Singapore
Luming Shi, Singapore, Singapore
Edwin S. Chan, PhD, Singapore, Singapore
Shi-ru Chia, MBBS, FRCS (Ortho), Singapore, Singapore
Darren Tay, MBBS, FRCS (Ortho), Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Seng-Jin Yeo, FRCS, Singapore, Singapore

The most efficacious route of tranexamic acid administration in total joint arthroplasty: a systematic review and network meta-analysis.

Poster No. P0766
Preoperative Emergency Department Visits are Predictive of Postoperative Emergency Department Visits and Discharge Disposition in Total Knee Arthroplasty Patients
Eric Kiskadden, MD, Dayton, OH
Neil Soehnlen, MD, Dayton, OH
Andrew Froehle, PhD, Dayton, OH
Eric Erb, MD, Dayton, OH
Anil Krishnamurthy, MD, Dayton, OH

Preoperative emergency department visits in patients undergoing total knee arthroplasty are predictive of postoperative emergency department visits and discharge disposition.

Poster No. P0767
Is the Oral Anticoagulant Prophylaxis Necessary for the Prevention of Venous Thromboembolism after Joint Arthroplasty in a Korean Population?
Kyoung H. Moon, MD, Incheon, Republic of Korea
Joon S. Kang, MD, Incheon, Republic of Korea
Yunghun Youn, Incheon, Republic, of Korea

RXB prophylaxis was found to tend to decrease the incidence of VTE after knee or hip arthroplasty in a Korean population.

Poster No. P0768
How do Patients find their Hip or Knee Arthroplasty Surgeon? A Survey at a High-Volume Urban Community Hospital
Ryan D. Scully, MD, Washington, DC
Matthew J. Kinnard, BS, Brinklow, MD
Daniel Gelman, Washington, DC
Haijun Wang, Washington, DC
Catherine Pulford, NP, Bethesda, MD
Kathryn Mikolajczak, Bethesda, MD
Gautam Sircum, MD, Chevy Chase, MD

Patients were surveyed about their method of finding their surgeon. Referral to their surgeon was the predominant method and demographic factors did not have impact on surgeon method selection.

Poster No. P0769
Electronic Platform Enhances Patient-Reported Outcome Measure Collection for Total Hip and Knee Arthroplasty within a Multispecialty Medical Group
Bradley P. Graw, MD, Palo Alto, CA
John Cooper, Palo Alto, CA
Linda Balszy, BS, Sunnyvale, CA
Kristen Wilson-Jones, MBA, Auburn, CA
Edward Yu, MD, Mountain View, CA
Dominick Frosch, PhD, Palo Alto, CA
James M. Hartford, MD, Palo Alto, CA

Electronic collection methods may improve PROMs survey response rates, leading to improved data validity, while decreasing the marginal cost of data collection.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0770
Can Presurgery PROMIS-29 Scores Identify Patients Likely to do Well After Total Joint Replacements?

Michael B. Cross, MD, New York, NY
Charles N. Cornell, MD, Greenwich, CT
Alejandro Gonzalez Della Valle, MD, New York, NY
Mark P. Figgie, MD, New York, NY
Seth A. Jerabek, MD, New York, NY
Justin Do, BS, New York, NY
Mayu Sasaki, MPH, New York, NY
Jackie Szymonifka, MA, New York, NY
Lisa A. Mandl, MD, MPH, New York, NY

Here we examine whether pre-operative PROMIS29 domains are associated with either serious adverse events or clinical outcomes, 1 year after total hip or total knee replacement.

Poster No. P0771
Comparative Proteome Analysis of the Capsule from Patients with Frozen Shoulder

Yoshihiro Hagiwara, MD, Sendai, Japan
Akira Ando, Sendai, Japan
Kenji Kanazawa, MD, Sendai, Japan
Masashi Koide, Sendai, Japan
Takuya Sekiguchi, MD, Sendai, Japan
Kazuki Suzuki, MD, Sendai, Japan
Eiji Itoi, MD, Sendai, Japan

A label-free quantitative shotgun proteomic approach was used to elucidate the pathogenesis of frozen shoulder (FS). The pathophysiology of FS differs between the upper and lower parts of the capsule.

Poster No. P0772
Comparison of High- and Low-Dose Intra-Articular Steroid Injection for Treatment of Primary Shoulder Stiffness: A Prospective Randomized Controlled Trial

Ji Hoon Bahk, Seoul, Republic of Korea
Yang-Soo Kim, MD, Seoul, Republic of Korea
Hyo-Jin Lee, MD, Seoul, Republic of Korea
Jong Ho Kim, Seoul, Republic of Korea
Hyung-Lae Cho, Busan, Republic of Korea
Seok-Joon Yoon, Incheon, Republic of Korea
Sang-Yup Han, Seoul, Republic of Korea
Ji Hoon Bahk, Seoul, Republic of Korea

Intra-articular injection of corticosteroid is a reliable method for the treatment of shoulder stiffness with no significant differences between high and low dose.

Poster No. P0773
Delayed Management of Distal Biceps Tendon Ruptures: Primary Repair versus Semitendinosus Autograft Reconstruction

Tym Frank, MD, Toronto, ON, Canada
Anna Seltser, MD, Tel Aviv, Israel
Ruby Grewal, MD, London, ON, Canada
Graham J. King, MD, London, ON, Canada
George S. Athwal, MD, London, ON, Canada

Delayed reconstruction of irreparable distal biceps ruptures with semitendinosus autograft produces similar results as compared to delayed direct repair.

Poster No. P0774
Mid- to Long-Term Follow Up of Shoulder Arthroplasty for Primary Glenohumeral Osteoarthritis in Patients Aged 60 or Under

Jacob Kirsch, MD, Ann Arbor, MI
Lionel Neyton, MD, Lyon, France
Philippe Collotte, Lyon, France
Louis Gossing, Lyon, France
Gilles Walsh, MD, Lyon, France

At mid- to long-term follow up, favorable functional and subjective outcomes are reported in young patients undergoing HA or TSA for primary glenohumeral arthritis, with better survivorship after HA.

Poster No. P0775
Measurement of Functional Reach Space in Preoperative and Postoperative Shoulder Arthroplasty – Difference in Reverse versus Total Shoulder Arthroplasty

Weiyuan Xiao, San Francisco, CA
Patrick Curran, MD, San Francisco, CA
Li-Wei Hung, MD, San Francisco, CA
Wo-Jan Tseng, MD, Hsinchu County, Taiwan
Alex Ngan, BA, Valencia, CA
Jeffrey C. Lotz, PhD, San Francisco, CA
ChunBong B. Ma, MD, San Francisco, CA
Brian T. Feeley, MD, San Francisco, CA

The functional reach space measurement can assess shoulder motion in three dimensional spaces and may be a more useful clinical tool to monitor the functional outcomes after shoulder arthroplasty.

Poster No. P0776
Outcomes of Bilateral Shoulder Arthroplasties: A Comparison of Bilateral Total Shoulder Arthroplasties and Bilateral Reverse Shoulder Arthroplasties

Eric M. Padegimas, MD, Philadelphia, PA
Ryan M. Cox, MD, Philadelphia, PA
Tyler J. Brolin, MD, Collierville, TN
Mark D. Lazarus, MD, Philadelphia, PA
Charles L. Getz, MD, Newton Square, PA
Matthew L. Ramsey, MD, Philadelphia, PA
Gerald R. Williams, MD, Philadelphia, PA
Joseph A. Abboud, MD, Philadelphia, PA

This study demonstrates that patients undergoing bilateral TSAs have better postoperative functional outcomes than patients requiring bilateral RSAs.

Poster No. P0777
The Effect of Glenoid Perforation and Cement Extrusion in Total Shoulder Arthroplasty

Gregory I. Pace, MD, Hershey, PA
Connor Zale, BS, Hershey, PA
Rachel Thomas, Hershey, PA
Gregory S. Lewis, PhD, Hershey, PA
Hwa Bok Wee, PhD, Hershey, PA
Hyunmin M. Kim, MD, Hershey, PA

Glenoid vault perforation during total shoulder arthroplasty can result in decreased glenoid component cement fixation and risk suprascapular nerve injury if the cement is extruded posteriorly.
Poster No. P0778
Patient Specific Planning Reduces Errors Before Surgery and Potentially Improves Outcomes
Kygong S. Min, MD, Kailua, HI
Asheesh Bedi, MD, Ann Arbor, MI
Henry M. Fox, BS, MA, Boston, MA
Gilles Walch, MD, Lyon, France
Jon J. Warner, MD, Boston, MA

Patient specific planning can improve a surgeon’s understanding of glenoid morphology and bring treatment strategies into closer agreement with the gold standard.

Poster No. P0779
The Greater Tuberosity Angle: A New Predictor for Rotator Cuff Tear
Gregory Cunningham, Geneva
Emilie Nicodème-Paulin, Neuchâtel, Switzerland
Margaret M. Smith, PhD, St. Leonards, Australia
Nicolas Holzer, MD, PhD, Genève, Switzerland
Benjamín Cass, MBBS, St. Leonards, Australia
Alfan Young, PhD, St. Leonards, Australia

We describe a new radiographic angle that can accurately detect rotator cuff tears. This is the first study to prove the involvement of the greater tuberosity morphology in subacromial impingement.

Poster No. P0780
Genetic Variation of Propionibacterium acnes and Association with Orthopaedic Shoulder Infections
K. Keely Boyle, MD, Buffalo, NY
Scott Nodzo, MD, Las Vegas, NV
Donald Yergeau, PhD, Buffalo, NY
Brandon Marzullo, Buffalo, NY
John K. Crane, MD, PhD, Buffalo, NY
Thomas R. Duquin, MD, Buffalo, NY

Our findings support the presence of a genetic difference between C. acnes (previously P. acnes) strains causing definite clinical infection versus those responsible for probable contamination.

Poster No. P0781
Treatment of Acute Shoulder Infection: Can Osseous Lesion be a Rudder in Guideline for Determining the Method of Debridement?
Myungseok Kim, Seoul, Republic of Korea
Jongki Lee, Seoul, Republic of Korea
Kyunghan Ro, MD, Seoul, Republic of Korea
Jong-Dai Kim, Seoul, Republic of Korea
Jung-Youn Kim, MD, Seoul, Republic of Korea
Hwan-Jin Kim, MD, Seoul, Republic of Korea
Yong-Girl Rhee, MD, Seoul, Republic of Korea

If osseous lesions are detected on preoperative MRI, open debridement is more likely to be appropriate than arthroscopic debridement.

Poster No. P0782
Development and Validation of a Risk Calculator for Prolonged Opioid Use After Shoulder Surgery
Allen D. Nicholson, MD, New Haven, CT
Hafiz Kassam, MD, Toronto, ON, Canada
Jacqueline Steele, BS, Old Greenwich, CT
Natalie Passarelli, Hamden, CT
Theodore A. Blaine, MD, Farmington, CT
David Kovacevic, MD, New Haven, CT

Predicting prolonged opioid use following shoulder surgery with a risk calculator helps identify patients who require preoperative pain management so as to reduce addiction risk and opioid abuse.

Poster No. P0783
Clinical Outcomes and Recurrence Rates after Arthroscopic Stabilization Procedures in Young Patients with Glenoid Bone Erosion More than 20 Percent
In Park, Seoul, Republic of Korea
Sang-Jin Shin, MD, Seoul, Republic of Korea
Jae-Ho Lee, MD, Goyang, Republic of Korea
Jun Seok Kang, Seoul, Republic of Korea
Youngeol Jo, Seoul, Republic of Korea

Arthroscopic stabilization procedures for recurrent anterior shoulder instability in patients with large glenoid bone erosions more than 20% showed satisfactory clinical outcomes and recurrence rate.

Poster No. P0784
Postoperative Urinary Dysfunction Following Shoulder Surgery: Rates and Risk Factors
Jason S. Klein, MD, Philadelphia, PA
Grant C. Jangochian, BS, Newtown Square, PA
Ocean Thakar, BS, Old Bridge, NJ
Samuel R. Huntley, BS, Lake Worth, FL
Jared Thomas, MD, Philadelphia, PA
Mark D. Lazarus, MD, Philadelphia, PA
Surena Namdari, MD, MSc, Philadelphia, PA
Matthew L. Ramsey, MD, Philadelphia, PA
Joseph A. Abboud, MD, Philadelphia, PA

Similar to lower extremity surgery, postoperative urinary dysfunction and retention is common following shoulder surgery, which has important implications for patient satisfaction and outcomes.

Poster No. P0785
Borderline Glenoid Bone Defect in Anterior Shoulder Instability: Latarjet Procedure versus Bankart Repair
Yoon Sang Jeon, Incheon, Republic of Korea
Myungseok Kim, Seoul, Republic of Korea
Kyunghan Ro, MD, Seoul, Republic of Korea
Jong-Dai Kim, Seoul, Republic of Korea
Jung-Youn Kim, MD, Seoul, Republic of Korea
Hwan-Jin Kim, MD, Seoul, Republic of Korea
Yong-Girl Rhee, MD, Seoul, Republic of Korea

The Latarjet procedure could be superior to Bankart repair for treatment of anterior shoulder instability associated with borderline glenoid bone loss.

Poster No. P0786
Large Drill Holes are Still Present in the Long Term after Arthroscopic Bankart Repair with Absorbable Anchors: An 18-Year Randomized Prospective Follow Up
Christina Chrysanthou Constantiou, BS, MD, Trollhättan, Sweden
Ninni Sernert, RPT, Trollhättan, Sweden
Lars Rostgaard-Christensen, MD, Lidköping, Sweden
Juri Kartus, MD, Trollhättan, Sweden

Healing at the drill hole sites does not occur in the long term. No correlation is seen between drill hole appearance and functional outcomes, failure rates, or the development of degenerative changes

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Poster No. P0787
Rotator Cuff Tear-Induced Loss of Aquaporin 4 Leads to Rotator Cuff Muscle Atrophy in Mice
Yong-Soo Lee, PhD, Seoul, Republic of Korea
Ja Yeon Kim, Seoul, Republic of Korea
Hyonam Kim, Seoul, Republic of Korea
Se-Young Ki, Seoul, Republic of Korea
Seok Won Chung, MD, Seoul, Republic of Korea
Skeletal muscle atrophy represents the progressive degeneration or shrinkage of myocytes and triggered by various reasons such as aging, cancer, cachexia, injury, and inflammation. Muscle loss is generally caused by protein degradation via the ubiquitin-p

Poster No. P0788
Obesity is Associated with Increased Prevalence of Glenohumeral Osteoarthritis and Arthroplasty
Kevin C. Wall, BA, Durham, NC
Cary S. Politzer, BS, Durham, NC
Grant E. Garrigues, MD, Durham, NC
Patients with higher BMI are at increased odds of developing primary osteoarthritis, and undergoing arthroplasty, of the shoulder - a joint not traditionally considered to be weight-bearing.

Poster No. P0789
Closed Wound Drainage in Total Shoulder Arthroplasty: National Utilization Patterns and Impact on Outcomes
Jimmy J. Chan, MD, Scarsdale, NY
Carl Cirino, MD, Southport, CT
Jashvant Poeran, MD, PhD, New York, NY
Hsin-Hui Huang, MD, MS, New York, NY
Madih Mazumdar, PhD, New York, NY
Leesa M. Galatz, MD, New York, NY
Bradford O. Parsons, MD, New York, NY
Shawn G. Anthony, MD, MBA, New York, NY
Paul J. Cagle, MD, New York, NY
Nationwide database demonstrates that closed-wound drainage in shoulder arthroplasty is associated with near 50% increase in odds for blood transfusions with minimal effects on other outcomes.

Poster No. P0790
Comparison of Arthroscopic and Open Osteocapsular Arthroplasty for Primary Osteoarthritis of the Elbow
Jaeman Kwak, Seoul, Republic of Korea
Yucheng Sun, PhD, Seoul, Republic of Korea
Erica Kholinne, MD, Jakarta, Indonesia
Kyoung-Hwan Koh, MD, Seoul, Republic of Korea
In-Ho Jeon, MD, PhD, Seoul, Republic of Korea
In the case of a flexion dominant limitation, the open procedure is more favorable. Both procedures cannot guarantee excellent outcome in the patients who have severe UHJ narrowing.

Poster No. P0791
Shoulder Propionibacterium Acnes Rebound after Benzoyl Peroxide Use
Ashley Klein, Baltimore, MD
Grant Duval, BS, Westminster, MD
Logan Kolakowski, BS, Baltimore, MD
Derek L. Jones, BS, Baltimore, MD
Jim K. Lai, MD, Valhalla, NY
Jonathan D. Packer, MD, Baltimore, MD
R. Frank Henn, MD, Ellicott City, MD
Syed A. Hasan, MD, Baltimore, MD
Mohit Gilotra, MD, Baltimore, MD
Although benzoyl peroxide effectively decreases P Acnes, there is rebound at one week after treatment.

Poster No. P0792
Reverse Total Shoulder Arthroplasty for Proximal Humerus Fracture Is Not a Typical DRG 484: A Propensity-Matched Cohort Study
Nikhil N. Verma, MD, Chicago, IL
Joseph Liu, MD, Chicago, IL
Avinesh Agarwalla, Bartlett, IL
Anirudh K. Gowd, Cary, NC
Anthony A. Romeo, MD, Chicago, IL
Gregory P. Nicholson, MD, Chicago, IL
Brian Forsythe, MD, Chicago, IL
In this investigation we establish that performing an RTSA due to proximal humerus fracture has an elevated risk of adverse events in comparison to RTSA due to cuff arthropathy.

Poster No. P0793
Automated Detection and Classification of the Proximal Humerus Fracture by Using Deep Learning Algorithm
Seok Won Chung, MD, Seoul, Republic of Korea
Kyung-Soo Oh, MD, Seoul, Republic of Korea
Jong Pil Yoon, MD, Daegu, Republic of Korea
Joon Yub Kim, MD, Gyeonggi, Republic of Korea
Sung Hoon Moon, Chuncheon, Republic of Korea
Jieun Kwon, Seoul, Republic of Korea
Hyo-Jin Lee, MD, Seoul, Republic of Korea
Youngmin Noh, MD, Seoul, Republic of Korea
The use of artificial intelligence can accurately detect and classify proximal humerus fractures on plain shoulder AP radiographs. Further studies are necessary to determine the feasibility of applying artificial intelligence to the clinic and whether its

Poster No. P0794
Hemiarthroplasty for Proximal Humerus Fracture, Nonunion, or Malunion: Effect of Acute vs. Delayed Intervention
Jonathan D. Barlow, MD, MS, Rochester, MN
Douglas W. Bartels, MD, Rochester, MN
William R. Aibinder, MD, Rochester, MN
Scott P. Steinmann, MD, Rochester, MN
Robert H. Cofield, MD, Saint Simons Island, GA
John W. Sperling, MD, MBA, Rochester, MN
Jianjun Zhong, MD, Rochester, MN
Joaquin Sanchez-Sotelo, MD, Rochester, MN
Hemiarthroplasty for proximal humerus fracture and its sequelae seems to provide reasonable pain relief but limited motion and low ASES scores.

Poster No. P0795
Rout and Out: An Extraction Technique for Well-Fixed Humeral Stems in Revision Shoulder Arthroplasty
Jason Kang, MD, Rochester, MN
Anthony L. Logli, MD, Rochester, MN
Adam J. Tagliero, MD, Rochester, MN
Jonathan D. Barlow, MD, MS, Rochester, MN
Douglas W. Bartels, MD, Rochester, MN
William R. Aibinder, MD, Rochester, MN
Robert H. Cofield, MD, Saint Simons Island, GA
John W. Sperling, MD, MBA, Rochester, MN
The router bit extraction technique facilitates the removal of well-fixed humeral stems in revision shoulder arthroplasty in a very high percentage of patients.
**Poster No. P0796**
Predicting Outstanding Results After Reverse Shoulder Arthroplasty Using Percent of Maximal Outcome Improvement

Jonathan C. Levy, MD, Fort Lauderdale, FL  
Derek Berglund, MD, Fort Lauderdale, FL  
Dhanur Damodar, MD, Miami, FL  
Rushabh Vakharia, MD, Fort Lauderdale, FL  
Ellie Moeller, BS, Miami Beach, FL  
Dragomir Mijic, DO, Madison Heights, MI

Thresholds exist for predicting excellent results following RSA. Some 61.3% of maximal SST improvement and 68.2% of maximal ASES improvement can be expected to achieve Excellent satisfaction.

**Poster No. P0797**
Radiographic Parameters Associated with Acromial Stress Fracture after Reverse Total Shoulder Arthroplasty

Shawn T. Yeazell, MD, Bethlehem, PA  
Ajith Malige, MD, Bethlehem, PA  
Hannah Milthorpe, BS, Freemansburg, PA  
Gregory F. Carolan, MD, Bethlehem, PA

A more medialized humeral component is associated with the development of an acromial stress fracture after reverse total shoulder arthroplasty.

**Poster No. P0798**
A New Quantitative Load Balancing Sensor for Reverse Total Shoulder Arthroplasty

Joseph D. Zuckerman, MD, New York City, NY  
Thomas W. Wright, MD, Gainesville, FL  
Ari R. Youderian, MD, Aliso Viejo, CA  
Richard B. Jones, MD, Asheville, NC  
Ira M. Parsons, MD, Portsmouth, NH  
Michael Condit, PhD, Boerne, TX  
Matthias A. Verstraete, MSc, PhD, Dania Beach, FL  
Joseph Decerce, Dania Beach, FL  
Gordon Goodchild, Dania Beach, FL  
Alexander T. Greene, Gainesville, FL  
Christopher Roche, MS, MBA, Gainesville, FL

Shoulder Sensorisation

Evaluation of stability during reverse total shoulder arthroplasty using sensor technology during trialing before placing the final implants and assessing the intra-articular loads.

**Poster No. P0799**
Opioid Free Reverse Shoulder Arthroplasty Surgery: Optimizing Multimodal Pain Management

Kiran Chatha, MD, Miami, FL  
Vani J. Sabesan, MD, Weston, FL  
Danielle L. Malone, MPH, Weston, FL  
Sandra Koen, ATC, Weston, FL  
Gregory J. Gilot, MD, Davie, FL

Though opioids have been a mainstay in postoperative pain management, our preliminary results suggest an opioid free postoperative course is possible with education and multimodal pain management.

**Poster No. P0800**
Superior Baseplate Inclination is Association with Instability After Reverse Total Shoulder Arthroplasty

Peter N. Chalmers, MD, Salt Lake City, UT  
Robert Z. Tashjian, MD, Salt Lake City, UT  
Brook I. Martin, Salt Lake City, UT  
Cassandra A. Ricketts, MD, Danville, PA  
Heath Henninger, PhD, Salt Lake City, UT  
Erin Granger, MPH, Salt Lake City, UT

Instability after RTSA is associated with greater superior baseplate inclination and thus surgeons should consider inferiorly inclining the baseplate to avoid postoperative instability.

**Poster No. P0801**
Reverse Shoulder Arthroplasty for Four-Part Proximal Humerus Fracture in Elderly Patients: Can a Healed Tuberosity Improve the Functional Outcomes?

Yong-Min Chun, MD, PhD, Seoul, Republic of Korea  
Sang-Jin Shin, MD, Seoul, Republic of Korea  
Doosup Kim, MD, PhD, Wonju, Republic of Korea  
Do-Byung Lee, MD, Suwon, Republic of Korea

Tuberosity healing is not a prerequisite for satisfactory outcomes after reverse shoulder arthroplasty for four-part proximal humerus fractures in elderly patients.

**Poster No. P0802**
Surgically Relevant Anatomy of the Axillary and Radial Nerves in Relation to the Latissimus Dorsi Tendon in Variable Shoulder Positions: A Cadaveric Study

Stephen T. Gates, MD, Farmers Branch, TX  
Brian W. Sager, MD, Dallas, TX  
Garen Collett, MD, Dallas, TX  
Michael S. Khazzam, MD, Southlake, TX

Knowing the defined measurements of axillary and radial nerve locations relative to the latissimus dorsi tendon insertion can help mitigate the risk of iatrogenic nerve injury.

**Poster No. P0803**
3D Planning Software for Reverse Total Shoulder Arthroplasty: Analysis of Intersurgeon Variation in 360 Cases

Emilie V. Cheung, MD, Redwood City, CA  
Pierre-Henri Flurin, MD, France  
Alexander T. Greene, Gainesville, FL  
Matthew Hamilton, PhD, Gainesville, FL  
Richard B. Jones, MD, Asheville, NC  
Ira M. Parsons, MD, Portsmouth, NH  
Sandrine V. Polakovic, MS, Gières, France  
Paul D. Saadi, MD, Dallas, TX  
Thomas W. Wright, MD, Gainesville, FL  
Ari R. Youderian, MD, Aliso Viejo, CA  
Joseph D. Zuckerman, MD, New York City, NY

3D Planning Software for Shoulder Arthroplasty

Augmented glenoid components were utilized in 76% of cases. For resultant version correction, a local maxima was observed at 0° and a bell-shaped distribution at 5° of retroversion.

**Poster No. P0804**
The Value Impact of Humeral Component Press-Fit in Reverse Shoulder Arthroplasty

Jonathan C. Levy, MD, Fort Lauderdale, FL  
Derek Berglund, MD, Fort Lauderdale, FL  
Dragomir Mijic, DO, Madison Heights, MI  
Tsung Yee Law, MD, Fort Lauderdale, FL  
Jennifer Kurowicki, MD, Jersey City, NJ  
Samuel Rosas, MD, Winston-Salem, NC

Transition from cemented to press-fit technique for RSA humeral stem resulted in 47% increase in value.

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**Poster No. P0805**

Influence of Suprascapular Nerve Injury on Rotator Cuff Muscle and Tendon-Bone Insertion in Massive Rotator Cuff Tear Model

**Hisao Shimokobe, MD, Kurume, Japan**
Tomonoshin Kanazawa, MD, PhD, Kurume, Japan
Masafumi Gotoh, MD, PhD, Kurume, Japan
Koji Tanaka, Kurume, Japan
Naoto Shiba, MD PhD, Fukuoka, Japan

In clinical settings, suprascapular nerve injury may be associated not only with atrophic changes / fatty degeneration of the muscle but also with tendon-bone insertion in large/massive cuff tears.

**Poster No. P0806**

Acromiohumeral Interval Does Not Influence Mid-Term Functional Outcomes After Arthroscopic Rotator Cuff Repair

**Merrill Lee, MBBS, Singapore, Singapore**
Yonggqiang J. Chen, MBBS, Singapore, Singapore
Denny T. Lie, FRCS, Singapore, Singapore

Reduced preoperative AH1 does not negatively impact mid-term functional outcomes after arthroscopic rotator cuff repair.

**Poster No. P0807**

Repair of Rotator Cuff Tendon Defects in Aged Rats with a Growth Factor Delivery Gel

**Bo Han, PhD, Los Angeles, CA**
Ian A. Jones, Los Angeles, CA
Zhi Yang, MD, Los Angeles, CA
Josephine Y. Fang, MS, Los Angeles, CA
C. T. Vangsness, MD, Los Angeles, CA

This study investigated a novel, tendon-specific gel scaffold containing growth factors in two different aged rat rotator cuff injury models.

**Poster No. P0808**

Pullout Strength of All-Suture Anchors: Effect of the Insertion and Pulling Angle – A Biomechanical Study

**Hyeon Jang Jeong, MD, Seongnam, Republic of Korea**
Seok Hoon Yang, Seongnam, Republic of Korea
Sung-Min Rhee, MD, Seongnam, Republic of Korea
Yasuhiro Itami, MD, Osaka, Japan
Michelle H. McGarry, MD, Long Beach, CA
Thay Q. Lee, PhD, Long Beach, CA
Joo Han Oh, Seoul, Republic of Korea
Tae-Yon Rhee, MD, PhD, Seoul, Republic of Korea

This study provides biomechanical evidence for the optimal insertion angle for ASA: a more vertical angle rather than 45°, as recommended by the deadman theory.

**Poster No. P0809**

Interleukin 17A: A Translational Target in Supraspinatus Tendinopathy

**Neal L. Millar, MD, Glasgow, United Kingdom**
Frank Kolbinger, Basel, Switzerland
Friedrich Radt, PhD, Basel, Switzerland
Olivier Leupin, Basel, Switzerland
Shea Carter, PhD, Basel, Switzerland
Novartis Pharma AG, Basel, Switzerland
Linda Mindeholm, MD, Basel, Switzerland
Iain B. McInnes, MD, PhD, Glasgow, United Kingdom
Matthias Schieker, MD, Basel, Switzerland

This study provides evidence that targeting cytokines in tendinopathy has translational potential. This has led to the first Phase II multicenter human trial of anti-IL-17A in cuff tendinopathy.

**Poster No. P0810**

Direction of Tear Progression in Shoulders with Symptomatic Rotator Cuff Tears: A Prospective Study of 82 Shoulders

**Nobuyuki Yamamoto, MD, Sendai, Japan**
Taku Hatta, MD, Sendai, Japan
Mitsuysuo Mineta, Sendai, Japan
Hirotaka Sano, MD, PhD, Sendai, Japan
Eiji Ito, MD, Sendai, Japan

Eighty-two shoulders with symptomatic rotator cuff tears with more than three MRI examinations were prospectively enrolled. Most of the symptomatic rotator cuff tears showed tear progression during the first 6 months.

**Poster No. P0811**

Latissimus Dorsi Tendon Transfer vs. Superior Capsular Reconstruction for Treatment of Irreparable Massive Rotator Cuff Tears: A Retrospective Comparison Study with Short-Term Clinical Results

**Albert Lin, MD, Pittsburgh, PA**
Tiffany Dugan Kadow, MD, Pittsburgh, PA
Daniel Bryan Garcia, MD, Woodbridge, ON, Canada
Rebecca Minorini, BA, Pittsburgh, PA
Yaron Sela, MD, Pittsburgh, PA
Mark E. Baratz, MD, Bethel Park, PA
Ruth A. Delaney, MD, Dundrum, Ireland

Patients with massive rotator cuff tears improve more in forward flexion with superior capsular reconstruction and more in external rotation with latissimus transfer. Both groups reported similar PROS.

**Poster No. P0812**

Celecoxib Significantly Reduces Narcotic Use After Shoulder Surgery

**Katherine A. Burns, MD, Saint Louis, MO**
Lynn Robbins, PA-C, Saint Charles, MO
Angela LeMarr, RN, Saint Louis, MO
James Burns, Washington, DC
Diane Morton, MS, Saint Louis, MO
Melissa L. Wilson, Los Angeles, CA

Multimodal pain control using Celecoxib was effective to reduce opioid use in shoulder surgery patients postoperatively.

**Poster No. P0813**

Functional Outcomes of Rotator Cuff Repair in Patients Over 75 Years Old

**Daniel S. Brereton, DO, Riverside, CA**
Jeffrey Gates, MD, Riverside, CA

Rotator cuff repair in patients over the age of 75 is clinically successful in patients with mild to moderate symptoms.

**Poster No. P0814**

Effect of Recombinant Human Parathyroid Hormone on Rotator Cuff Healing after Arthroscopic Repair

**Sung-Min Rhee, MD, Seongnam, Republic of Korea**
Tae-Yon Rhee, MD, PhD, Seoul, Republic of Korea
Dohoon Kim, Seoul, Republic of Korea
Hyong Suk Kim, Seongnam, Republic of Korea
Joo Han Oh, Seoul, Republic of Korea

Teriparatide, a recombinant human parathyroid hormone, significantly improved rotator cuff healing after surgical repair in chronic rotator cuff tears.
Poster No. P0815
In Vivo Tissue Response to Rotator Cuff Repair Augmentation with Biological Patches
Mustafa Rashid, London, United Kingdom
Richard D. Smith, PhD, Rockaway Crossing, MA
Sarah Snelling, Oxford, United Kingdom
Stephanie G. Dakin, PhD, Oxford, United Kingdom
Kim E. Wheway, RN, BS, Oxford, United Kingdom
Bridge Watkins, RN, Oxford, United Kingdom
Andrew J. Carr, FRCS, Oxford, United Kingdom
Supraspinatus tendon tissue samples harvested 4 weeks after repair and augmentation with 2 commercially available biological patches demonstrated significant ECM disruption compared to control group.

Poster No. P0816
Osteoconductive Resorption Characteristics of a Novel Biocomposite Suture Anchor Material in Rotator Cuff Repair
Jan K. Vonhofegeon, MD, Cologne, Germany
Dominik John, MD, Bonn, Germany
PLGA/β-TCP/CS is a fully resorbable and osteoconductive anchor material which seems to have superior resorption characteristics than other commonly used bioabsorbable materials in arthroscopic RCR.

Poster No. P0817
Arthroscopic Anchored vs. Anchorless Transosseous Rotator Cuff Repair: Two-Year Clinical Outcomes
Umasathan Srikumaran, MD, MBA, Ellicott City, MD
Brendan Shi, BS, Baltimore, MD
Eric Huish, DO, Riverbank, CA
Catherine Hannan, BS, Baltimore, MD
Kelly G. Kilcoyne, MD, El Paso, TX
Edward G. McFarland, MD, Lutherville, MD
This is the first adequately powered study to show that arthroscopic anchorless repairs can attain similar long-term clinical outcomes and repair integrity to arthroscopic anchored repairs.

Poster No. P0818
Healing Rates after Rotator Cuff Repair for Patients Taking Either Celecoxib or Placebo: A Randomized Controlled Trial
Katherine A. Burns, MD, Saint Louis, MO
Lynn Robbins, PA-C, Saint Charles, MO
Angela LeMarr, RN, Saint Louis, MO
Amber Childress, RN, Saint Louis, MO
Diane Morton, MS, Saint Louis, MO
James Burns, Washington, DC
Melissa L. Wilson, Los Angeles, CA
A nearly 20% difference occurred in rotator cuff healing rates after arthroscopic rotator cuff repair for patients who received either celecoxib or placebo for 3 weeks after rotator cuff repair.

Poster No. P0819
Bone Healing Potential of Fascia Lata Autograft to Humeral Head Footprint in Rotator Cuff Reconstruction
Daisuke Mori, MD, Kyoto, Japan
Yoshikazu Kida, MD, Kyoto, Japan
Masahiko Kobayashi, MD, PhD, Kyoto, Japan
This is the first study to histologically evaluate the greater tuberosity and fascia lata autograft (FLA) harvested en bloc from patients who underwent an FLA patch procedure.

Poster No. P0820
Can Scapular Function Recover after Rotator Cuff Repair with Cuff Muscle Advancement for Massive Rotator Cuff Tears?
Shin Yokoya, MD, Hiroshima, Japan
Hirosi Negi, Hiroshima, Japan
Ryo-suake Mutsushita, Hiroshima, Japan
Mitsuo Ochi, MD, PhD, Hiroshima, Japan
Nobuo Adachi, MD, Hiroshima, Japan
The arthroscopic rotator cuff repair with muscle advancement and SSN release for massive rotator cuff repair can achieve good clinical outcomes without any cuff and scapular dysfunction.

Poster No. P0821
Comparisons of Latissimus Dorsi Transfer to Lower Trapezius Transfer Clinical Outcomes for the Treatment of Massive Rotator Cuff Tears
Jarret M. Woodmass, MD, Calgary, AB, Canada
Eric R. Wagner, MD, Atlanta, GA
Michelle J. Chang, BS, Boston, MA
Kathryn M. Welp, Cambridge, MA
Laurence D. Higgins, MD, Brookline, MA
Jon J. Warner, MD, Boston, MA
Arthroscopic LT tendon transfer provided earlier improvements in pain and sustained improvements in function when compared to open LD transfer and equivalence when compared to arthroscopic LD transfer.

Poster No. P0822
Intra-Articular Steroid Injection at 6 Weeks Postoperatively for Shoulder Stiffness after Arthroscopic Rotator Cuff Repair Does Not Affect Repair Integrity
In-Bo Kim, MD, Busan, Republic of Korea
Dong-Wook Jung, MD, Busan, Republic of Korea
Intra-articular steroid injection at 6 weeks postoperatively for shoulder stiffness after arthroscopic rotator cuff repair may relieve pain and enhance shoulder ROM without influencing retear.

Poster No. P0823
Effect of Muscle Quality on Operative and Nonoperative Treatment of Rotator Cuff Tears
Micah Naimark, MD, Ann Arbor, MI
Thai Q. Trinh, MD, Blacklick, OH
Bridger M. Rodoni, BS, Ann Arbor, MI
Christopher B. Robbins, Ann Arbor, MI
James E. Carpenter, MD, Ann Arbor, MI
Asheesh Bedi, MD, Ann Arbor, MI
Bruce S. Miller, MD, MS, Ann Arbor, MI
A positive tangent sign was predictive of worse operative outcomes, resulting in equivalent improvements with surgical and nonsurgical treatment.

Poster No. P0824
Clinical and Radiologic Outcome of Arthroscopic Rotator Cuff Repair: Single-Row versus Transosseous Equivalent Repair
Jae-Chul Yoo, MD, Seoul, Republic of Korea
Jae Woo Shim, Seoul, Republic of Korea
Sanghoon Chae, Seoul, Republic of Korea
Hyunbo Sim, Seoul, Republic of Korea
Joon-Hwan Kim, Seoul, Republic of Korea
Jeong Y. Jeong, MD, Seoul, Republic of Korea
Single row (SR) and transosseous equivalent (TOE) repair provided similar clinical and radiologic outcomes. However, TOE repair showed significantly improved healing rate for large-sized tear.
Is Atelocollagen Injection Effective in Partial Thickness Rotator Cuff Tears at Clinic? A Prospective Randomized Clinical Evaluation

Hyo-Jin Lee, MD, Seoul, Republic of Korea
Yang-Soo Kim, MD, Seoul, Republic of Korea
Hyung-Lae Cho, Busan, Republic of Korea
Seok-Joon Yoon, Incheon, Republic of Korea
Sang-Yup Han, Seoul, Republic of Korea
Jong Ho Kim, Seoul, Republic of Korea
Ji Hoon Bahk, Seoul, Republic of Korea

The atelocollagen injection can be effective modality in partial thickness intratendinous rotator cuff tears.

Is Augmentation of the Long Head of the Biceps Tendon Helpful in Arthroscopic Treatment of Irreparable Large to Massive Rotator Cuff Tears?

Ji Hoon Bahk, Seoul, Republic of Korea
Yang-Soo Kim, MD, Seoul, Republic of Korea
Hyo-Jin Lee, MD, Seoul, Republic of Korea
Jong Ho Kim, Seoul, Republic of Korea
Hyung-Lae Cho, Busan, Republic of Korea
Seok-Joon Yoon, Incheon, Republic of Korea
Sang-Yup Han, Seoul, Republic of Korea

Both partial repair and repair with LHBT augmentation were effective treatment for large to massive cuff tears. Regarding the time and effort spent on LHBT augmentation, it is not highly recommended.

Woven Collagen Biotextiles for Rotator Cuff Tendon Repair - An In Vivo Pilot Investigation

Derrick Knapi, MD, Cleveland, OH
Greg D. Lern, Perkiomenville, PA
Phillip McClellan, PhD, Cleveland, OH
Jameson L. Cuskey, Cleveland, OH
Robert J. Gillespie, MD, Shaker Heights, OH
Ozan Akkus, Cleveland, OH

Utilization of an electrochemically aligned collagen scaffold allows for stem cell seeding, increasing repair stiffness when augmenting critically sized rotator cuff tendon defects in a rabbit model.

Perioperative Testosterone Levels Affect the Revision Surgery Rate After Arthroscopic Rotator Cuff Repair

Jourdan M. Cancienne, MD, Charlottesville, VA
Stephen F. Brockmeier, MD, Charlottesville, VA
Brian C. Werner, MD, Charlotteville, VA

The present study found that a significant association between low levels of testosterone and the rate of revision surgery are primary arthroscopic rotator cuff repair.
**Poster No. P0835**
High Rates of Return to Work after Distal Tibial Allograft Glenoid Reconstruction for Recurrent Anterior Shoulder Instability: Average Five-Year Follow Up
Brandon C. Cabarcas, BS, Hialeah, FL
Anirudh K. Gowd, Cary, NC
Joseph Liu, MD, Chicago, IL
Grant Garcia, MD, Mercer Island, WA
Brandon Manderele, Chicago, IL
Brian J. Cole, MD, MBA, Chicago, IL
Nikhil N. Verma, MD, Chicago, IL
Anthony A. Romeo, MD, Chicago, IL
Distal tibial allograft anterior glenoid reconstruction patients have excellent rates of overall satisfaction and return to work at 5 years postop, although return to heavy work is more prolonged.

**Poster No. P0836**
Higher Complication Rates in Lower Socioeconomic Classes: Are Risk Adjustment Models Necessary in Cervical Spine Surgery?
Anthony J. Boniello, MD, Philadelphia, PA
Alexander M. Lieber, BA, Philadelphia, PA
Yehuda E. Kerbel, MD, Philadelphia, PA
Philip Petrucci, MD, Philadelphia, PA
Venkat C. Kavuri, MD, Philadelphia, PA
Amrit S. Khalsa, MD, Philadelphia, PA
Lower socioeconomic status was found to be associated with increased resource utilization following anterior decompression and fusion. Risk adjustment models may be necessary.

**Poster No. P0837**
Impact of Iliac Crest Bone Grafting on Postoperative Outcomes and Complication Rates Following Minimally Invasive Transforaminal Lumbar Interbody Fusion
Kern Singh, MD, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Jordan Guntin, Chicago, IL
Sailee S. Karmarkar, BS, Chicago, IL
This study aims to determine the effect of iliac crest bone graft on patient reported outcomes and complication rates following minimally invasive transforaminal lumbar interbody fusion.

**Poster No. P0838**
3'-Untranslated Region Polymorphisms of Methyleneetetrahydrofolate Reductase and Thymidylate Synthase associated with Osteoporotic Vertebral Compression Fracture Susceptibility in Postmenopausal Women
Tae Keun Ahn, MD, Seongnam, Republic of Korea
Dong-Eun Shin, MD, PhD, Seoungnam, Republic of Korea
The polymorphisms in the 3'-UTR of the MTHFR and TS genes have a significant association with osteoporosis and osteoporotic vertebral compression fracture.

**Poster No. P0839**
Does Prophylactic Administration of Tranexamic Acid Reduce Mean Operative Time and Postoperative Blood Loss in Posterior Approach Lumbar Spinal Fusion Surgery Performed for Degenerative Spinal Disease?
Evan Larson, MD, Omaha, NE
Emmett Gannon, MD, Omaha, NE
Tyler Evans, Omaha, NE
Jason Long, Omaha, NE
Elizabeth Lyden, MS, Omaha, NE
Chris A. Cornett, MD, Omaha, NE
TXA’s routine use should be considered in 1-2 level lumbar posterior interbody fusion operations, as it is safe and associated with reduced postoperative drain output and mean surgical time.

**Poster No. P0840**
Clinical Patterns, Epidemiology, and Risk Factors of Multidrug-Resistant Pyogenic Spondylitis in Thoraco-Lumbar Spine
Katsuhisa Yamada, MD, Sapporo, Japan
Masahiko Takahata, MD, Sapporo, Japan
Ken Nagahama, MD, PhD, Sapporo, Japan
Akira Iwata, MD, Sapporo, Japan
Tsutomu Endo, Sapporo, Japan
Takashi Onishi, MD, Hakodate, Japan
Hideki Sudo, MD, Sapporo, Japan
Manabu Ito, MD, Sapporo, Japan
Norimasa Iwasaki, Sapporo, Japan
Risk factors for multidrug-resistant infection in thoraco-lumbar spine included long administration periods of a broad-spectrum antibiotic, advanced age, collagen disease, and previous spinal surgery.

**Poster No. P0841**
Indicators for Non-Routine Discharge Following Cervical Deformity-Corrective Surgery: Radiographic, Surgical, and Patient-Related Predictors
Peter G. Passias, MD, Westbury, NY
Cole Bortz, BA, New York, NY
Virginie Lafage, PhD, New York, NY
Renaud Lafage, New York, NY
Justin S. Smith, MD, Charlottesville, VA
Breton G. Line, BS, Denver, CO
Gregory M. Mundis, MD, San Diego, CA
Khaled M. Kebaish, MD, Baltimore, MD
Michael P. Kelly, MD, Saint Louis, MO
Themistocles S. Protopsaltis, MD, New York, NY
Daniel Sciubba, MD, Baltimore, MD
Alexandra Soroceanu, MD, Halifax, NS, Canada
Eric O. Klineberg, MD, Sacramento, CA
Douglas C. Burton, MD, Kansas City, KS
Robert A. Hart, MD, Seattle, WA
Frank J. Schwab, MD, New York, NY
Robert S. Bess, MD, Castle Rock, CO
Christopher I. Shaffrey, MD, Charlottesville, VA
Christopher Ames, MD, San Francisco, CA
International Spine Study Group
Severe preop cervical malalignment and age, among other factors, were strong predictors of non-routine discharge.
Poster No. P0842
Two-Year Outcomes of Patients Treated with Basivertebral Nerve Ablation for the Relief of Chronic Low Back Pain: Results of the SMART Trial
Jeffrey S Fischgrund, MD, Southfield, MI
Rick C. Sasso, MD, Carmel, IN
Hyun W. Bae, MD, Los Angeles, CA
Alfred L. Rhine, MD, Charlotte, NC

Basivertebral nerve ablation in the lumbar spine is statistically and clinically superior to a sham interventional procedure for the treatment of low back pain, after 2 yrs of follow up.

Poster No. P0843
Biologic Disease-Modifying Anti-Rheumatic Drugs Did Not Increase the Risk Factor for Postoperative Infection after Spinal Surgery in Rheumatoid Arthritis Patients
Kensuke Kayama, MD, PhD, Chuo, Japan
Tetsuro Ohba, MD, PhD, Chuo City, Japan
Shigeto Ebata, MD, PhD, Chuo City, Japan
Hirofumi Haro, MD, Yamanashi, Japan

Biologic disease-modifying antirheumatic drugs did not increase the risk factor for postoperative surgical site infection after spinal surgery in rheumatoid arthritis patients.

Poster No. P0844
Temporal Profile of Serum Bone Metabolic Markers after Posterior/Transforminal Lumbar Interbody Fusion
Ryota Hyakkan, MD, Hokkaido, Japan
Masahiko Kanayama, MD, Hakodate, Japan
Masahiko Takahata, MD, Sapporo, Japan
Fumihiro Oha, MD, Hakodate, Japan
Yukitosh Shimamura, MD, Hakodate, Japan
Takamasa Watanabe, MD, Hokkaido, Japan
Hiroyuki Hara, Hokkaido, Japan
Tomoyuki Hashimoto, MD, Hakodate, Japan
Norimasa Iwasaki, Sapporo, Japan

Bone formation markers decreased at 1 week and increased with a peak level at 4 weeks after PLIF/TLIF. Bone resorption markers decreased at 1 week increased with a peak level at 8 weeks.

Poster No. P0845
Cohort Study Assessing Cortical Bone Quality Using Ultrasound
Shotaro Tsuji, Nishinomiya, Japan
Keishi Maruo, MD, Nishinomiya, Japan
Shinichi Yoshida, MD, Nishinomiya, Japan

This cohort study reports the possible clinical use of the cortical speed of sound (cSOS) and how it is related to gender, age, calcaneus bone density, and bone metabolism markers.

Poster No. P0846
Cost Effectiveness in Adolescent Scoliosis Surgery: Perspective from the Developing World
Rishi M. Kanna, MS, MBBS, Coimbatore, India
Ajoy P. Shetty, Coimbatore, India
Shanmuganathan Rajasekaran, PhD, Coimbatore, India

The safety and efficacy of two different implant constructs in the management of AIS is discussed.

Poster No. P0847
Interlaminar Stabilization Surgery vs. Posterior Lumbar Fusion Surgery: Five-Year Follow Up in the = 65 Year-Old Patient
Antonio T. Brescia, MD, New York, NY
Christina Dowe, BS, New York, NY
Frank P. Cammisa, MD, New York, NY
Catherine Himo Gang, MPH, New York, NY

Cohort analysis with 5-year follow-up data comparing interlaminar stabilization (ILS) to posterior lumbar fusion (PLF) in patients ≤ 65 years demonstrates durability and efficacy of ILS.

Poster No. P0848
Patients Undergoing Three Level or Greater Decompression-Only Surgery for Lumbar Spinal Stenosis Have Similar Outcomes to Those Undergoing Single-Level Surgery at Two Years
Michael T. Nolte, MD, Chicago, IL
Philip Louie, MD, Chicago, IL
Bryce A. Basques, MD, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Gagan Grewal, BS, MS, Chicago, IL
Tarush Khurana, BA, Chicago, IL
Steven T. Heidt, BS, Chicago, IL
Edward J. Goldberg, MD, Chicago, IL
Howard S. An, MD, Chicago, IL

Patients undergoing a stability-preserving decompression for of three or more levels for lumbar stenosis present with similar postoperative outcomes to those who undergo single-level decompression.

Poster No. P0849
Correlation between Neck Disability Index, Patient-Reported Outcomes Measurement Information System, and Short Form-12 in Minimally Invasive Anterior Cervical Discectomy and Fusion
Avani Vaishnav, MBBS, New York, NY
Catherine Himo Gang, MPH, New York, NY
Steven McAnany, MD, Saint Louis, MO
Todd J. Albert, MD, New York, NY
Sheeraz Qureshi, MD, New York, NY

This study assesses the correlation between NDI, PROMIS Physical Function, and SF-12 Physical Health Score in minimally invasive anterior cervical discectomy and fusion (ACDF).

Poster No. P0850
A Comparison of Multilevel Anterior Cervical Discectomy and Fusion Performed in an Inpatient versus Outpatient Setting
Avani Vaishnav, MBBS, New York, NY
Patrick S. Hill, MD, Los Angeles, CA
Steven McAnany, MD, Saint Louis, MO
Catherine Himo Gang, MPH, New York, NY
Kern Singh, MD, Chicago, IL
Britanny Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Sheeraz Qureshi, MD, New York, NY

This study compares patient and procedural factors, and outcomes and safety in multilevel ACDF in the inpatient vs. outpatient setting. Results show that multilevel ACDF is safe in the outpatient setting.
Poster No. P0851
Patients with Scoliosis in the Setting of Cerebral Palsy are at a Higher risk for Needing Assistive Devices

Joshua E. Hyman, MD, New York, NY
Megan Campbelli, BA, Hampton, NJ
Christopher K. Deallie, BS, Brooklyn, NY
Hiroko Matsumoto, MA, New York, NY
Fay Callejo, MPH, New York, NY
Nicole Bainton, NP, New York, NY
Michael G. Vitale, MD, MPH, Irvington, NY
Benjamin D. Roye, MD, New York, NY
David P. Roye, MD, New York, NY

This study examined the association between scoliosis severity and pulmonary and gastrointestinal dysfunction in patients with CP, using respective assistive devices as proxy measures.

Poster No. P0852
Preoperative Nutritional Status and Postoperative Surgical Site Complications in Adult Spinal Deformity Surgeries

Isador H. Lieberman, MD, MBA, Plano, TX
Xiaobang Hu, PhD, Plano, TX

Some 12.6% of the patients who underwent ASD surgeries were found to be malnourished. Poor preoperative nutritional status is associated with a three-fold increase in postoperative wound infections.

Poster No. P0853
Intravenous and Oral Tranexamic Acid are Equivalent at Reducing Blood Loss in Thoracolumbar Spinal Fusion: A Prospective Randomized Trial

Charles C. Yu, MD, Detroit, MI
Omar Kadri, MD, Plymouth, MI
Alien Kadado, MD, Royal Oak, MI
Jacob A. Pawloski, BS, Royal Oak, MI
Stephen Bartol, MD, Wixom, MI
Gregory Graziano, MD, Detroit, MI

Oral tranexamic acid is equivalent to intravenous TXA at reducing blood loss in thoracolumbar spinal fusion, and it is more cost effective.

Poster No. P0854
A Prospective Randomized Controlled, Blinded Study to Analyze the Efficacy of Balanced Preemptive Analgesia in Lumbar Fusion Surgery

Dilip C. Soundararajan, MBBS, MS, Coimbatore, India
Rishi M. Kanna, MS, MBBS, Coimbatore, India
Ajay P. Shetty, Coimbatore, India
Shanmuganathan Rajasekaran, PhD, Coimbatore, India

The study compares efficacy of preemptive analgesia with conventional postoperative analgesia for pain relief after spinal fusion surgery.

Poster No. P0855
Symptomatic Epidural Hematoma after Elective Cervical Spine Surgery: Incidence, Timing, Risk Factors, and Associated Complications

Jerry Y. Du, MD, Cleveland, OH
Adam J. Schell, MD, Cleveland Heights, OH
Chang-Yeon Kim, MD, Cleveland, OH
Nikunj Trivedi, MD, Cleveland, OH
Uri Ahn, MD, Bedford, NH
Nicholas U. Ahn, MD, Shaker Heights, OH

Postoperative epidural hematomas requiring readmission or reoperation following elective cervical spine surgery are rare, with multiple independently-associated risk factors and complications.
Poster No. P0860
Perioperative Allogenic Red Blood Cell Transfusion is Associated with Surgical Site Infection Following Posterior Lumbar Interbody Fusion Surgery in the Elderly
Jason A. Horowitz, BA, Northville, MI
Varun Puvanesarajah, MD, Baltimore, MD
Amit Jain, MD, Baltimore, MD
Xudong J. Li, MD, PhD, Charlottesville, VA
Adam L. Shimer, MD, Charlottesville, VA
Francis H. Shen, MD, Charlottesville, VA
Hamid Hassanzadeh, MD, Charlottesville, VA
Patients undergoing posterior lumbar interbody fusion who receive perioperative allogenic red blood cell transfusions face greater than twice the odds of experiencing a surgical site infection.

Poster No. P0861
A Comparison of 30-Day Complications Following Three-Level Anterior Cervical Discectomy and Fusion, Two-Level Anterior Corpectomy and Fusion, and Hybrid Approaches for Treatment of Multilevel Cervical Stenosis: A Multivariate National Surgical Quality Imp
Raj Gala, MD, New Haven, CT
Anoop R. Galivanche, BS, New Haven, CT
Murillo Adrados, MD, New Haven, CT
Ariane Boylan, New Haven, CT
Jonathan N. Grauer, MD, New Haven, CT
Arya G. Varthi, MD, New Haven, CT
The aim of this study was to compare perioperative morbidity of ACDF, ACCF, and hybrid surgery for the treatment of three-level cervical pathology.

Poster No. P0862
Predictive Patient Factors for Developing Postoperative Dysphagia following Anterior Cervical Discectomy and Fusion
Bassel Diebo, MD, Brooklyn, NY
Neil V. Shah, MD, MS, New York, NY
George A. Beyer, BA, MS, Brooklyn, NY
John J. Kelly, BA, New York, NY
Frank S. Cautela, BS, Staten Island, NY
Jared M. Newman, MD, Brooklyn, NY
James C. Messina, BS, Brooklyn, NY
Douglas Hollern, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Nicholas H. Post, MD, Brooklyn, NY
Frank J. Schwab, MD, New York, NY
Virginia Lafage, PhD, New York, NY
Carl B. Paulino, MD, Brooklyn, NY
Orthopaedic Research Laboratory of Brooklyn at SUNY Downstate
Demographics of patients that developed postoperative dysphagia, a complication of anterior cervical discectomy and fusion, were analyzed to assist in preoperative counseling and risk-stratification.

Poster No. P0863
Is Chronic Kidney Disease Associated with Postoperative Complications after Spinal Fusion Surgery?
George A. Beyer, BA, MS, Brooklyn, NY
Stanley Weng, MS, Brooklyn, NY
Neil V. Shah, MD, MS, New York, NY
Jared M. Newman, MD, Brooklyn, NY
Frank S. Cautela, BS, Staten Island, NY
Sebastian Bustamante, BS, New York, NY
Omar Hariri, Brooklyn, NY
Scott Pascal, MD, Brooklyn, NY
Renaud Lafage, New York, NY
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Carl B. Paulino, MD, Brooklyn, NY
Orthopaedic Research Laboratory of Brooklyn at SUNY Downstate
Chronic kidney disease (CKD) may predispose spine surgery patients to complications. Patients who had CKD and underwent 2-3 level spinal fusion had higher odds of postoperative medical complications.

Poster No. P0864
Preoperative Chronic Opioid Therapy: A Risk Factor for Reoperations, Complications, and Postoperative Opioid Use Following Cervical Fusion Surgery
Piyush Kalakoti, MBBS, MD, Iowa City, IA
Nicholas Bedard, MD, Iowa City, IA
Alexander J. Volkmar, BS, Coralville, IA
Alan G. Shamrock, MD, Iowa City, IA
Cosma Calderaro, MD, Rome, Italy
Andrew J. Pugely, MD, Iowa City, IA
Preoperative COT is a modifiable risk factor and is strongly associated with prolonged postoperative opioid use and inferior short-term and long-term outcomes after cervical spine surgery.

Poster No. P0865
Optimizing the Volume-Value Relationship in Laminectomy: An Evidence-Based Analysis of Outcomes and Economies of Scale
William C. Frankel, BS, Houston, TX
Sergio M. Navarro, Houston, TX
Heather Haebirle, BS, Houston, TX
Deepak Ramanathan, MD, Cleveland Heights, OH
Inyang Udo-Inyang, MD, Cleveland, OH
Eric Y. Wang, BS, Houston, TX
Prem Ramkumar, MD, MBA, Cleveland Heights, OH
We used stratum-specific likelihood ratio (SSLR) to identify evidence-based volume thresholds defining the volume-value relationship in laminectomy surgery.

Poster No. P0866
Hyperamylasemia and Pancreatitis Following Posterior Spinal Surgery
Kazuyoshi Kobayashi, MD, PhD, Nagoya, Japan
Kei Ando, MD, Nagoya, Japan
Shiro Imagama, MD, PhD, Nagoya, Japan
Intraoperative blood loss caused a rise in the serum amylase level following posterior spinal surgery. Thus, this level should be carefully monitored after spinal surgery with significant blood loss.
Poster No. P0867
Is Incision and Drainage Always Necessary for Wound Drainage Following Thoracolumbar Spine Surgery? Predictive Factors for Failure of Conservative Management
Hayeem L. Rudy, BA, Brooklyn, NY
Woojin Cho, MD, PhD, Hartsdale, NY
Sandip P. Tarpada, MD, Bronx, NY
Brittany Oster, BS, Bronx, NY
Jacob F. Schulz, MD, New York, NY

Our study sought to determine whether conservative treatment alone may be suitable for patients presenting with early postoperative wound drainage without other signs of surgical site infection (SSI).

Poster No. P0868
Outcomes of Multilevel Vertebrectomy for Spondylodiscitis
Alysa Nash, BS, Baltimore, MD
Nissim Ackshota, Baltimore, MD
Mark Shasti, MD, Baltimore, MD
Luke Brown, MBA, MD, Suamico, WI
Kelley E. Banagan, MD, Baltimore, MD
Eugene Y. Koh, MD, PhD, Baltimore, MD
Steven C. Ludwig, MD, Baltimore, MD
Daniel E. Gelb, MD, Baltimore, MD

We describe our experience in the operative management of PVO in 56 consecutive patients who underwent multilevel corpectomies (>2) via a combined approach.

Poster No. P0869
The Impact of Preoperative Cannabis Use on Outcomes Following Cervical Spinal Fusion: A Propensity Score-Matched Analysis
Neil V. Shah, MD, MS, New York, NY
Cameron R. Moattari, BS, Brooklyn, NY
Joshua D. Lavian, BA, Brooklyn, NY
George A. Beyer, BA, MS, Brooklyn, NY
Peter G. Passias, MD, Westbury, NY
Renaud Lafage, New York, NY
Han Jo Kim, MD, New York City, NY
Carl B. Paulino, MD, Brooklyn, NY
Frank J. Schwab, MD, New York, NY
Virginie Lafage, PhD, New York, NY
Bassel Diebo, MD, Brooklyn, NY
Orthopaedic Research Laboratory of Brooklyn at SUNY Downstate

Comparison of outcomes between baseline cannabis users undergoing cervical fusion and non-cannabis users revealed cannabis to be a strong, independent predictor of increased 90-day readmission rates.

Poster No. P0870
More than 10-Year Follow Up after Total En Bloc Spondylectomy for Spinal Tumors
Satoshi Kato, MD, Kanazawa, Japan
Hideki Murakami, MD, Kanazawa, Japan
Satoru Demura, MD, Kanazawa, Japan
Kazuya Shimamura, MD, Ishikawa, Japan
Takaki Shimizu, Kanazawa, Japan
Noriko Oku, MD, Kanazawa, Japan
Ryo Kitagawa, Ishikawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

We evaluated the clinical outcomes with follow up exceeding 10 years after total en bloc spondylectomy for spinal tumors. This study showed the outcomes to be favorable, even with metastatic tumors.

Poster No. P0871
Surgical Complication and Reoperation Rates of Mini Open Correction and Fusion for Adolescent Idiopathic Scoliosis: Two to Seven Years Follow Up
Matthew J. Geck, MD, Austin, TX
Devender Singh, PhD, Austin, TX
Eric Truumees, MD, Austin, TX
John K. Stokes, MD, Austin, TX

Minimally invasive surgical technique for scoliosis correction is a viable option with lower revision and complication rates.

Poster No. P0872
Determination of Clinically Meaningful PROMIS Severity Ranges for Lumbar Degenerative Patients
Rafa Rahman, Baltimore, MD
Alvaro Ibaseta, MS, Baltimore, MD
Jay Reider, MD, MPH, Baltimore, MD
Richard L. Skolasky, ScD, Baltimore, MD
Lee H. Riley, MD, Baltimore, MD
David B. Cohen, MD, Cockeysville, MD
Daniel Sciubba, MD, Baltimore, MD
Khaled M. Keabaish, MD, Baltimore, MD
Brian J. Neuman, MD, Baltimore, MD

Lumbar degenerative patients have worse PROMIS scores than the general population, making current severity ranges meaningless. This study provides PROMIS severity ranges specific to these patients.

Poster No. P0873
The Influence of Conflicts of Interest on Outcomes in the Lumbar Disc Arthroplasty Literature
Kern Singh, MD, Chicago, IL
Jordan Guntin, Chicago, IL
Kaitlyn L. Cardinal, BS, Chicago, IL
Brittany Haws, MD, Chicago, IL
Benjamin Khechen, BA, Chicago, IL
Dil V. Patel, BS, Chicago, IL
Simon Lalehzarian, MS, North Chicago, IL

This study aims to determine the association between study outcomes and conflicts of interest in the LDA literature.

Poster No. P0874
Predictors of Medical Malpractice Outcomes after Spine Surgery
Howard Park, MD, Los Angeles, CA
Richard Hwang, BS, Los Angeles
Amador Bugarin, BS, Norwalk, CA
Christopher D. Hamad, BA, Houston, TX
Joshua D. Proal, Cardiff, CA
William L. Sheppard, MD, MPH, Los Angeles, CA
Ryan Smith, Los Angeles, CA
Arya N. Shamie, MD, Los Angeles, CA
Don Y. Park, MD, Santa Monica, CA

A retrospective medicolegal database study of medical malpractice outcomes after spine surgery.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Maintenance of normal range should be considered for better p
surgical intervention. Active treatment vitamin D supplementation and
Assessment of serum 25-OHD is recommended in LSS needing
Vitamin D deficiency was highly prevalent in LSS patients (76.5%).
Sang-Bong Ko, MD, Daegu, Republic of Korea
Prospective Control Trial
Quality of Life of Lumbar Spinal Stenosis Requiring Surgery: A Randomized
The Effectiveness of Vitamin D Supplementation in Functional Outcome and
Poster No. P0879
The Effectiveness of Vitamin D Supplementation in Functional Outcome and Quality of Life of Lumbar Spinal Stenosis Requiring Surgery: A Randomized Prospective Control Trial
Sungho Lee, Daegu, Republic of Korea
Sang-Bong Ko, MD, Daegu, Republic of Korea
Vitamin D deficiency was highly prevalent in LSS patients (76.5%).
Assessment of serum 25-OHD is recommended in LSS needing surgical intervention. Active treatment vitamin D supplementation and maintenance of normal range should be considered for better p

Greater preoperative cervical and fusion kyphosis and postoperative correction of lordosis and loss of fusion lordosis is associated with increased odds of developing adjacent segment degeneration.

Poster No. P0876
Does Approach Matter? A Comparative Radiographic Analysis of Spinopelvic Parameters in Single Level Lumbar Fusion
Don Y. Park, MD, Santa Monica, CA
Seth Ahlquist, BS, Los Angeles, CA
Howard Park, MD, Los Angeles, CA
J.D. D. Gatto, BS, Los Angeles, CA
Arya N. Shamie, MD, Los Angeles, CA

Lumbar fusion techniques may yield differing radiographic results. Surgical technique is an important determinant of postoperative sagittal alignment, which may influence clinical outcomes.

Poster No. P0877
Cervical Sagittal Alignment Parameters and Neck Disability Before Surgery: Is There an Association?
Vasilios G. Igoumenou, MD, Athens, Greece
Vasilios Karantzoulis, MD, Stuttgart, Germany
Farzam Vazifehdeh, MD, Stuttgart, Germany

According to study’s results, cervical alignment parameters do not have a significant impact on health related quality of life in patients who do not undergo surgery.

Poster No. P0878
Driving Osteogenesis in Adipose-Derived Stem Cells by Targeting Bone Morphogenic Protein Antagonists with Clustered Regularly Interspaced Short Palindromic Repeats Epigenome Editing
Brandon D. Lawrence, MD, Salt Lake City, UT
Darrel S. Brodke, MD, Salt Lake City, UT
Robert Bowles, PhD, Salt Lake City, UT
Jacob Weston, BS, Salt Lake City, UT

Using CRISPR epigenome editing, we have shown that we can effectively direct differentiation of ASCs toward osteogenesis in vitro.

Poster No. P0875
Sagittal Alignment Parameters and Early Radiographic Changes Associated with Adjacent Segment Pathology after Anterior Cervical Discectomy and Fusion
Philip Louie, MD, Chicago, IL
Bryce A. Basques, MD, Chicago, IL
Michael T. Nolte, MD, Chicago, IL
Jannat M. Khan, BS, High Point, NC
Steven T. Heidt, BS, Chicago, IL
Arya G. Varthi, MD, New Haven, CT
Justin Paul, MD, Rye, NY
Edward J. Goldberg, MD, Chicago, IL
Howard S. An, MD, Chicago, IL

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
Poster Session II

Poster No. P0884
Predictors of Outcomes After Single-Level Anterior Cervical Discectomy and Fusion for Cervical Spondylotic Myelopathy: A Multivariate Analysis
Graham S. Goh, MBBS, MRCS(ED), Singapore, Singapore
Ming Han Lincoln Liew, MD, Singapore, Singapore
William Yeo, Singapore, Singapore
Zhixing Marcus Ling, MD, Singapore, Singapore
Chang Ming Guo, MBBS MRCS, Singapore, Singapore
Wai Mun Yue, MD, Singapore, Singapore
Seang B. Tan, FRCS, MBBS, Singapore, Singapore
John L. Chen, ChB, FRCS, Singapore, Singapore

Pre-op JOA score was an important predictor of outcomes after ACDF. Less pre-op disability lowered risk of residual pain. Older age predicted poorer function. Greater pre-op limb pain lowered RTW.

Poster No. P0885
Worsening of Sagittal Alignment Following Cervical Laminoplasty Does Not Correlate with the Recovery of Myelopathy or Patient-Reported Functionality Outcomes
Thomas M. Neustein, MD, Atlanta, GA
Albert Anastasio, BA, Atlanta, GA
Shuo Niu, MD, PhD, Atlanta, GA
Kevin X. Farley, BA, Atlanta, GA
Saagar C. Bakshi, BA, Atlanta, GA
John J. Rhee, MD, Atlanta, GA

Cervical laminoplasty yields satisfactory neurological and functional improvement. The worsening of sagittal alignment following the surgery does not correlate with the deterioration of patient-reported functionality outcomes.

Poster No. P0886
Determination of Clinically Meaningful Patient-Reported Outcomes Measurement Information System Severity Ranges for Cervical Degenerative Patients
Rafa Rahman, Baltimore, MD
Alvaro Ibaseta, MS, Baltimore, MD
Jay Reidler, MD, MPH, Baltimore, MD
Richard L. Skolasky, ScD, Baltimore, MD
Lee H. Riley, MD, Baltimore, MD
David B. Cohen, MD, Cokesville, MD
Daniel Sciuabba, BA, Baltimore, MD
Khaleed M. Kebaish, MD, Baltimore, MD
Brian J. Neuman, MD, Baltimore, MD

Cervical degenerative patients have worse PROMIS scores than the general population, making current severity ranges meaningless. This study provides PROMIS severity ranges specific to these patients.

Poster No. P0887
Prognostic Factors for Improvement in Physical Function Following Surgical Treatment of Cervical Myelopathy
Alvaro Ibaseta, MS, Baltimore, MD
Richard L. Skolasky, ScD, Baltimore, MD
Rafa Rahman, Baltimore, MD
Lee H. Riley, MD, Baltimore, MD
Daniel Sciuabba, BA, Baltimore, MD
Brian J. Neuman, MD, Baltimore, MD

In this study, we identify prognostic factors for improvement of physical function following surgical treatment of cervical myelopathy. We use PROMIS Physical Function as the outcome measure.

Poster No. P0888
Lower Urinary Tract Symptoms and Urinary Bother are Frequent in Patients Undergoing Elective Cervical Spine Surgery
Elizabeth Lieberman, MD, Portland, OR
Stephanie S. Radoslovich, BA, Portland, OR
Thomas O’Toole, BA, Portland, OR
Huy Hoang, BA, Portland, OR
Ryan Boone, MS, Portland, OR
Jung U. Yoo, MD, Portland, OR

Patients undergoing elective cervical spine surgery have high frequency of lower urinary tract symptoms and urinary bother. The prevalence of these symptoms is highest in patients with myelopathy.

Poster No. P0889
The Efficacy and Persistence of Selective Nerve Root Block under Fluoroscopic Guidance for Cervical Radiculopathy
Sung-Kyu Kim, PhD, MD, Gwangju, Republic of Korea
So Hyun Moon, PhD, Gwangju, Republic of Korea

Among multiple demographic factors, the symptom duration and etiology was most significant variable affecting the effect of cervical selective nerve root block.

Poster No. P0890
The Relationship Between Compensatory Mechanisms of Residual Kyphotic Deformity after Osteoporotic Vertebral Fractures and Health-Related Quality of Life
Keishi Maruo, MD, Nishinomiya, Japan
Toshiya Tachibana, MD, Nishinomiya, Japan
Fumihiro Anzumi, Nishinomiya, Japan
Kazuya Kishima, Nisinomiya City, Japan
Masakazu Toi, Nishinomiya, Japan
Shinichi Yoshiya, MD, Nishinomiya, Japan

Clinical outcomes were significantly worse in the decompensation group. Prevention of residual kyphotic deformity is important to maintain global sagittal alignment.

SPORTS MEDICINE

Poster No. P0891
Tissue Inhibitor of Metalloproteinase as a Synovial Fluid Biomarker of Postoperative Pain Following Anterior Cruciate Ligament Reconstruction
Andrew J. Clair, MD, New York, NY
Utkarsh Anil, BA, New York, NY
Matthew T. Kingery, BA, New York, NY
Lena Kenny, MSc, New York, NY
Eric J. Strauss, MD, Scarsdale, NY

Patients reporting higher levels of pain in the acute postoperative period after ACLR appear to have significantly elevated levels of TIMP-1 and TIMP-2 in their synovial fluid at the time of surgery.

Poster No. P0892
Synovial Fluid Biomarker Alternatives: Can Plasma and Urine Samples Shed Light on the Posttraumatic Intra-Articular Microenvironment?
Andrew J. Clair, MD, New York, NY
Utkarsh Anil, BA, New York, NY
Lena Kenny, MSc, New York, NY
Eric J. Strauss, MD, Scarsdale, NY

Biomarkers of inflammation extracted from blood and urine samples were unable to substitute synovial fluid while assessing the intra-articular microenvironment of the knee.

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Poster No. P0893
Preoperative Changes in the Biomarker Profile of the Knee before Anterior Cruciate Ligament Reconstruction

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Andrew J. Clair, MD, New York, NY
Matthew T. Kingery, BA, New York, NY
Lena Kenny, MSc, New York, NY
Eric J. Strauss, MD, Scarsdale, NY

The current study identifies 8 synovial fluid biomarkers whose concentrations change significantly during the acute inflammatory phase between ACL injury and surgery for reconstruction.

Poster No. P0894
The Infrapatellar Fat Pad Exhibits Increased Cellularity, Fibrosis, and Vascularity in a Rat Patellar Tendinopathy Model

Takashi Kitagawa, MSc, PT, Kanazawa, Japan
Junsuke Nakase, MD, Kanazawa, Japan
Kengo Shimozaki, Kanazawa, Japan
Kazuki Asai, MD, Kanazawa, Japan
Hiroyuki Tsuchiya, MD, Kanazawa, Japan

New insights from the histological findings demonstrated that infrapatellar fat pad responded to patellar tendinopathy with the pathological change in a rat model.

Poster No. P0895
Alterations in Synovial Fluid Biomarker Concentrations in Knees with Meniscus Injury Compared to Healthy Controls

Andrew J. Clair, MD, New York, NY
Utkarsh Anil, BA, New York, NY
Lena Kenny, MSc, New York, NY
Eric J. Strauss, MD, Scarsdale, NY

In this study, we identified 7 pro and inflammatory biomarkers in the synovial fluid of meniscus injured knees that are significantly different from contralateral uninjured controls.

Poster No. P0896
In Vivo Length Changes of Various Tibial and Femoral Attachments of the Posterior Cruciate Ligament

Willem A. Kernkamp, MD, Boston, MA
Axel J. Jens, The Hague, Netherlands
Nathan Varady, Boston, MA
Ewoud Van Arkel, MD, PhD, Den Haag, Netherlands
Rob G. H. H. Neijssen, MD, Leiden, Netherlands
Peter D. Asnis, MD, Boston, MA
Robert F. LaPrade, MD, PhD, Chanhasen, MN
Samuel K. Van de Velde, MD, Boston, MA
Guoan Li, PhD, Boston, MA

This study elucidated the effects of tibiofemoral attachment locations on the length changes of PCL grafts in healthy and PCL deficient contralateral knees during in vivo weight-bearing motion.

Poster No. P0897
Tranexamic Acid Toxicity in Human Periarticular Tissues: Caution in Clinical Practice

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Moeed Akbar, PhD, Glasgow, United Kingdom
Kathryn E. McCall, Glasgow, United Kingdom
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Lindsay Crowe, BS, MSc, Glasgow, United Kingdom
William J. Leach, FRCS Orth, Glasgow, United Kingdom
Brian P. Rooney, MD, Glasgow, United Kingdom
Simon Spencer, MD, Glasgow, United Kingdom
Michael Mullen, FRCS (Ortho), Glasgow, United Kingdom
Jacob L. Campton, FRCS (Ortho), Glasgow, United Kingdom
Iain B. McInnes, MD, PhD, Glasgow, United Kingdom
Neil L. Millar, MD, Glasgow, United Kingdom

Topical tranexamic acid causes cell death in tendon, synovium, and cartilage both ex vivo and in vitro at current commonly used clinical concentrations and time points.

Poster No. P0898
The Increasing Burden of Youth Baseball Elbow Injuries in United States Emergency Rooms

David Trofa, MD, New York, NY
Kyle Obana, BA, Honolulu, HI
Hasani Swindell, MD, New York, NY
Brian Shiu, MD, Towson, MD
Manish Noticewala, MD, Brooklyn, NY
Charles A. Popkin, MD, Dobbs Ferry, NY
Christopher S. Ahmad, MD, New York, NY

While the overall number of injuries sustained to youth baseball players on a national level is decreasing, elbow pathology is becoming more common.

Poster No. P0899
Postoperative Opioid Usage Following Outpatient Arthroscopic Sports Medicine Procedures

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Christopher J. Hadley, BS, Barnegat, NJ
William D. Emper, MD, Bryn Mawr, PA
Christopher M. Aland, MD, Newtown, PA
Kevin B. Freedman, MD, Bryn Mawr, PA
John P. Salvo, MD, Voorhees, NJ
Sommer Hammond, MD, Philadelphia, PA

By presenting the patterns of postoperative opioid consumption, surgeons can utilize this information to evaluate their current opioid prescribing protocols.

Poster No. P0900
Athletic Hip Injuries in Major League Baseball Pitchers Associated with Ulnar Collateral Ligament Pathology

David E. Kantrowitz, BS, New York, NY
David Trofa, MD, New York, NY
Denzel R. Woode, New York, NY
Christopher S. Ahmad, MD, New York, NY
Thomas S. Lynch, MD, New York, NY

This investigation demonstrates that MLB players who underwent UCL reconstruction sustained a higher frequency of proximal lower extremity injuries, especially athletic hip injuries, compared to matched controls.
Poster No. P0901
Opioid Induced Constipation after Rotator Cuff Repair: A Randomized Prospective Study
Danielle G. Weekes, MD, Egg Harbor Township, NJ
Nicholas J. Giunta, Somers Point, NJ
Bradford S. Tucker, MD, Ocean City, NJ
Virginia E. Londahl-Ramsey, DNP, Fort Myers, FL
Fotios P. Tjomakaris, MD, Ocean View, NJ
Matthew D. Pepe, MD, Linwood, NJ
The purpose of this study was to determine in a randomized prospective fashion, whether docusate sodium was superior to senna glycoside in reducing the risk of OIC in patients undergoing ARCR.

Poster No. P0902
Delivery of Common Knee Patient-Reported Outcome Instruments by Automated Mobile Phone Text Messaging in Pediatric Sports Medicine
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Matthew Buczek, BS, Philadelphia, PA
John Todd R. Lawrence, MD, PhD, Wynnewood, PA
Theodore J. Ganley, MD, Philadelphia, PA
Alexander J. Adams, BS, Philadelphia, PA
Apurva Shah, MD, MBA, Philadelphia, PA
Common knee Patient Reported Outcome Instruments were validated with text messaging in a pediatric population presenting to an orthopaedic sports medicine clinic in this prospective study.

Poster No. P0903
Performance and Return to Sport After Upper Extremity Fractures in the National Hockey League
Matthew Gottlin, MD, New York, NY
Shobhit Minhas, MD, New York, NY
Daniel B. Buchalter, MD, New York, NY
Oren Feder, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY
This study sheds light on the impact of upper extremity fractures in NHL players, and suggests that players can predictably return to sport at a high performance level.

Poster No. P0904
Factors Associated with Failure to Return to Play Following Ulnar Collateral Ligament Reconstruction in MLB Pitchers
Afolayan Oladeji, Chicago, IL
Lasun O. Oladeji, MD, MS, Columbia, MO
John R. Worley, MD, Columbia, MO
Seth Sherman, MD, Columbia, MO
Aaron Gray, MD, Columbia, MO
Emily Leary, PhD, Columbia, MO
This study was designed to determine the degree to which pre-injury performance metrics influence return to play at the same level following UCLR in a cohort of MLB pitchers.

Poster No. P0905
Use of a Bioactive and Robust 3D Printed Soft Implant for Repairing Critical Sized Cartilage Lesions in a Goat Knee Model
Ben Holmes, PhD, Burke, VA
Nathan J. Castro, PhD, Kelvin Grove, Australia
Se-Jun Lee, Washington, DC
Christopher Rossi, MD, Washington, DC
Christopher J. Cannova, MD, Bethesda, MD
Rajan Bawa, PhD, Fort Collins, CO
Matthew Oetgen, MD, Chevy Chase, MD
Currently, clinical treatments for cartilage injury are limited, ineffective, and costly. A new robust synthetic cartilage graft has been developed and tested in goats.

Poster No. P0906
Comparison of Clinical Outcomes in the Treatment of Patellofemoral Chondral Defects: Autologous Chondrocyte Implantation versus Fresh Osteochondral Allografts
Vahe Varzhpetyan, Van Nuys, CA
Nirav K. Patel, MD, MS, Philadelphia, PA
Zaira Chaudhry, MPH, Scranton, PA
Hytham Salem, BA, New York, NY
Bradford S. Tucker, MD, Ocean City, NJ
Kevin B. Freedman, MD, Bryn Mawr, PA
This study addresses isolated patellofemoral chondral defects ACI vs. OCA.

Poster No. P0907
Return to Sport and Sports Specific Outcomes After Osteochondral Allograft Transplantation in the Knee: A Systematic Review
Zachary Crawford, Cincinnati, OH
Adam Schumaier, MD, Cincinnati, OH
Georgina Glogovac, MD, Maryland Heights, MO
Brian M. Grawe, MD, Cincinnati, OH
Systematic review suggests osteochondral allograft transplantation for cartilage defects allows most athletes to return to sport and improve sport-specific patient outcomes.

Poster No. P0908
Magnetic Resonance Imaging and Clinical Outcomes of Osteochondral Allograft Transplantation of the Patella Using Femoral Hemicordilage Allografts
Kenneth M. Lin, MD, New York, NY
Dean Wang, MD, New York, NY
Francesca Coxe, BS, New York, NY
Mollyann Pais, BS, New York, NY
Alissa J. Burge, MD, New York, NY
Riley J. Williams, MD, New York, NY
Osteochondral lesions of the patella treated with osteochondral allograft from hemicordilage donor leads to significant improvement in clinical outcomes as well as bony incorporation on MRI.

Poster No. P0909
Preoperative Fascia Iliaca Compartment Blockade for Hip Arthroscopy: A Multicenter, Prospective, Randomized, Controlled, and Triple-Blinded Study
Blake Bodendorfer, MD, Washington, DC
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Patrick T. Laughlin, MD, New York, NY
Melissa C. Soderquist, BS, Washington, DC
Vishal Mehta, DO, Baltimore, MD
Kenneth B. Tepper, MD, Westminster, MD
Brian S. Freeman, MD, Washington, DC
Brent A. Gilmore, MD, Washington, DC
William F. Postma, MD, Bethesda, MD
In this prospective RCT, preoperative fascia iliaca blockade resulted in decreased use and earlier discontinuation of narcotics, improved pain control, and earlier discharge after hip arthroscopy.

Poster No. P0910
The Prevalence and Pattern of Iliopsoas Tendinitis Following Hip Arthroscopy
Abigail L. Campbell, MD, New York, NY
Hien Pham, MD, New York, NY
Michael Pickell, MD, New York, NY
Theodore S. Wolfson, MD, New York, NY
John Begly, MD, New York, NY
Thomas Youm, MD, New York, NY
A total of 258 cases of hip arthroscopy were reviewed; an 18.2% incidence of iliopsoas tendinitis was found. All cases responded to nonoperative modalities.
**Poster No. P0911**

High Survivorship After Hip Arthroscopy to Treat Femoroacetabular Impingement Syndrome with Capsular Plication: Factors Associated with Inferior Outcomes and Failure

Shane J. Nho, MD, Chicago, IL  
Gregory L. Cvetanovich, MD, Columbus, OH  
William Neal, Chicago, IL  
Benjamin Kuhns, MD, Rochester, NY  
**Edward Beck, MPH, Chicago, IL**  
Joshua D. Harris, MD, Houston, TX  
Alexander Weber, MD, Los Angeles, CA  
Richard C. Mather, MD, Durham, NC

This study showed hip arthroscopy failure rate for FAI is lower than previously reported and predicted by lack of preoperative athletic activity, while inferior outcomes are predicted by older age.

**Poster No. P0912**

Do Patient Reported Outcome Measurement Information System Depression and Anxiety Domains Correlate to Legacy Scores in Symptomatic Patients with Femoroacetabular Impingement?

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Charles M. Lawrie, MD, Saint Louis, MO  
Jeffrey J. Nepple, MD, Saint Louis, MO  
Cecilia Pascual-Garrido, MD, Saint Louis, MO  
John C. Clohisy, MD, Saint Louis, MO

PROMIS Anxiety and Depression had moderate to strong correlation to SF-12 Mental in symptomatic FAI patients undergoing operative treatment.

**Poster No. P0913**

Predictors of Failure After Surgical Treatment of Femoroacetabular Impingement: Results of a Multicenter Prospective Cohort of 621 Hips

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Ashsheh Bedi, MD, Ann Arbor, MI  
Ira Zaltz, MD, Royal Oak, MI  
Christopher M. Larson, MD, Edina, MN  
Paul E. Beaule, MD, Ottawa, ON, Canada  
Ernest L. Sink, MD, New York, NY  
Young Jo Kim, MD, PhD, Boston, MA  
John C. Clohisy, MD, Saint Louis, MO

Several patient and disease characteristics were independently associated with failure and may help guide patient-specific outcome expectations of FAI surgery based on results of a multicenter study.

**Poster No. P0914**

Arthroscopic Outcomes as a Function of Acetabular Coverage from a Large Hip Arthroscopy Study Group

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John J. Christoforetti, MD, Pittsburgh, PA  
Ben Kwian, PhD, PT, Valencia, PA  
Thomas J. Ellis, MD, New Albany, OH  
Dominic S. Carreira, MD, Atlanta, GA

A large hip arthroscopy study group found similar successful outcomes from primary hip arthroscopy performed in patients with low (borderline dysplasia), normal, and high LCEA (global pincer FAI).

**Poster No. P0915**

Clinical Assessment of the Acetabular Anterior Center Edge Angle on Modified False-Profile Radiographs

Michael M. Murphy, MD, Salt Lake City, UT  
Penny Atkins, BS, Salt Lake City, UT  
Evangelina F. Kobayashi, Salt Lake City, UT  
Andrew E. Anderson, PhD, Salt Lake City, UT  
Travis G. Maak, MD, Salt Lake City, UT  
**Stephen K. Aoki, MD, Salt Lake City, UT**

The modified False Profile (FP) radiograph of the hip offers similar views of acetabular morphology as the standard FP view, while also better visualizing of the superior head-neck junction.

**Poster No. P0916**

Feasibility of T1rho and T2 Map Magnetic Resonance Imaging for Evaluating Graft Maturation after Anatomic Double-Bundle Anterior Cruciate Ligament Reconstruction

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Kengo Harato, MD, PhD, Tokyo, Japan  
Shu Kobayashi, MD, Tokyo, Japan  
Masaya Nakamura, MD, Tokyo, Japan  
Mori Matsumoto, MD, Tokyo, Japan

This study was the first trial to assess the feasibility of T1rho and T2 map sequences to objectively monitor the course of graft maturation after ACL reconstruction.

**Poster No. P0917**

Anterior Cruciate Ligament Repair with Suture Tape Augmentation: Minimum Five-Year Patient-Reported Outcome Measures

Graeme P. Hopper, MBCHB, MRCSED, Coatbridge, United Kingdom  
Gordon MacKay, FRCS, Dunblane, United Kingdom

This study describes an anterior cruciate ligament (ACL) repair technique with suture tape augmentation with 5-year follow-up results.

**Poster No. P0918**

Septic Arthritis after Anterior Cruciate Ligament Reconstruction - Incidence and Risk Factors

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Viktor Lindgren, MD, Brookline, MA  
Per-Mats Janarv, MD, Stockholm, Sweden  
Magnus Forssblad, MD, PhD, Stockholm, Sweden  
Anders Stalman, MD, Saltsjobaden, Sweden

The incidence of Septic Arthritis following ACL reconstruction is 1.0 percent. Hamstring autograft, male sex, longer operating time, and the use of Clindamycin are independent risk factors.

**Poster No. P0919**

Obesity is Associated with Significant Morbidity and Less Stiffness After Multiligament Knee Surgery

Jayson Lian, Bronx, NY  
Neel Patel, MD, Pittsburgh, PA  
Ravi Vaswani, MD, Pittsburgh, PA  
Michael Nickoli, MD, Pittsburgh, PA  
Bryson P. Lesniak, MD, Pittsburgh, PA  
Volker Musahl, Pittsburgh, PA

Obese patients undergoing MLK surgery have significantly longer operative times, greater rates of wound infection requiring incision and drainage, and lower rates of arthrofibrosis.
Poster No. P0920
Bioabsorbable Screw Fixation Results in a Greater Tibial Tunnel Widening as Compared with an All Inside Technique with Suspensory Fixation
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Anterior cruciate ligament reconstruction is associated with greater tibial tunnel widening when using a bioabsorbable screw compared to an all-inside technique with suspensory fixation.

Poster No. P0921
Bone-Patellar Tendon-Bone Anterior Cruciate Ligament Reconstruction Does Not Cause Functional Anterior Knee Pain
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Connor A. Ojard, MD, Kenner, LA
Gerard K. Williams, BS, MD, Sunset, LA
Michael A. Nammour, MD, New Orleans, LA
Michael Wong, River Ridge, LA
Misty Suri, MD, New Orleans, LA

ACL reconstruction with BPTB graft does not cause functional anterior knee pain, as all patients in this study were not limited in return to sport or activity at 1-year postoperatively.

Poster No. P0922
Expanded Multimodal Analgesia at Discharge is Associated with Reduced Opioid Prescriptions After Anterior Cruciate Ligament Reconstruction Surgery
Jeannie C. Patzkowski, MD, Kailua, HI
Krista Highland, Rockville, MD
Michael Patzkowski, MD, Kailua, HI

An expanded, nonopioid multimodal analgesic regimen is associated with reduced total opioid prescriptions and refills 90 days after ACLR.

Poster No. P0923
Evaluation of Antifibrinolytic Use in Anterior Cruciate Ligament Arthroscopic Reconstruction: A Randomized Prospective Clinical Trial
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Marcelo S. Navarro, Sao Paulo, Brazil
Thiago R. Protta, Sao Paulo, Brazil
Alexandre Kusabara, MD, Sao Paulo, Brazil
Jose G. Suzuki Leal Roque, Santo Andre, Brazil

We prospectively evaluated the benefits of using tranexamic acid and epsilon aminocaproic acid in early postoperative days of ACL arthroscopic repair.

Poster No. P0924
Risk Factors and Complication/Readmission Rates following Multi-Ligament Knee Reconstruction
Lakshmanan Sivasundaram, MD, Cleveland, OH
Mark Labelle, MD, Solon, OH
Changi-Yeon Kim, MD, Cleveland, OH
Nikunj Trivedi, MD, Cleveland, OH
Michael Karns, MD, Cleveland, OH
Michael J. Salata, MD, Cleveland, OH
James E. Voos, MD, Cleveland, OH

Our results support the premise that multi-ligament knee reconstructions can be safely performed with few complications and low readmission rate on an outpatient basis.

Poster No. P0925
Anterior Cruciate Ligament Reconstruction in Patients Older than 60 Years: Retrospective Clinical Evaluation and Comparison with a Younger Age Group
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Edoardo Monaco, MD, Rome, Italy
Giorgio Bruni, MD, Roma, Italy
Carlo Massafra, Roma, Italy
Daniele Mazza, Roma, Italy
Fabio Conteduca, MD, Roma, Italy
Andrea Ferretti, MD, Rome, Italy

ACL reconstruction in patients older than sixty years is a safe and successful procedure with a good to excellent outcome similar to patients of a younger age.

Poster No. P0926
Preoperative Smoking Cessation and Single-Stage Surgeries may Decrease Complications after Multi-Ligament Knee Reconstructions
Neel Patel, MD, Pittsburgh, PA
Jaysen Lian, Bronx, NY
Michael Nickoli, MD, Pittsburgh, PA
Ravi Vaswani, MD, Pittsburgh, PA
Bryson P. Lesnikov, MD, Pittsburgh, PA
Volker Musahl, Pittsburgh, PA

Surgeons should emphasize preoperative smoking cessation and attempt single-stage multi-ligament knee reconstruction when possible in order to reduce the risk of postoperative complications.

Poster No. P0927
Prospective Evaluation of Osseous Integration and Patient Outcomes in Allograft Anterior Cruciate Ligament Reconstruction Comparing Tightrope Versus Biocomposite Interference Screw Fixation
Shahram Yari, MD, Houston, TX
Ashraf N. EI Naga, MD, Fremont, CA
Amar Patel, MD, Houston, TX
Anup A. Shah, MD, Houston, TX

This study demonstrates earlier femoral bone block incorporation at six months in Achilles allograft ACL reconstructions with femoral aperture fixation as compared to suspensory fixation.

Poster No. P0928
Strain Patterns of the Anterior and Posterior Borders of the Anterolateral Ligament of the Knee
Ji Hyun Ahn, MD, Goyangsi, Republic of Korea
In Jun Koh, MD, PhD, Seoul, Republic of Korea
Michelle H. McGarry, MD, Long Beach, CA
Nilay Patel, MD, Orange, CA
Charles Lin, BS, Orange, CA
Thay Q. Lee, PhD, Long Beach, CA

The ALL shows different strain patterns between the anterior and posterior borders, with a continuous decrease in the strain of posterior border as knee flexion increases.

Poster No. P0929
The Effect of Remnant Tissue Preservation in Anatomic Double-Bundle Anterior Cruciate Ligament Reconstruction on Knee Stability and Graft Maturation
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Masashi Kimura, MD, Maebashi, Japan
Katsushi Takeshita, MD, PhD, Setagaya, Japan

Comparisons with and without remnant tissue preservation (RTP) in ACL reconstruction revealed that RTP may enhance synovial coverage and graft maturation. In addition, it can contribute to better knee stability.
Poster No. P0930
Incidence and Causes of Reoperation within Two Years after Primary Anterior Cruciate Ligament Reconstruction

Anders Stalman, MD, Saltsjobaden, Sweden
Lise Lord, Stockholm, Sweden
Riccardo Cristiani, Stockholm, Sweden
Jesper Kraus-Schmitz, MD, Malmö, Sweden

One fifth of all ACL reconstructions need subsequent reoperations due to new complications. The most common causes for reoperations are screw extraction, meniscal procedures.

Poster No. P0931
Relationship Between Age at Achieving Adult Height and Anterior Cruciate Ligament Injury-Related Biomechanical Profiles in Young Adult Males

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Zachary DiPaolo, MD, Kettering, OH
Andrew Steffensmeier, BS, MD, Cincinnati, OH
Gary Metoyer, Beavercreek, OH
Andrew Froehle, PhD, Dayton, OH

This study's results indicate later developing males may be at higher risk for injury due to an associated tendency to maintain a more valgus knee during ground contact in a drop vertical jump.

Poster No. P0932
Impact of Three Preservation Methods (Freezing, Cryopreservation, and Freezing+Irradiation) on Human Meniscus Ultrastructure: An Ex-Vivo Comparative Study using Fresh Tissue as a Gold Standard

Matthieu Ollivier, MD, MS, Marseille, France
Jacquet Christophe, Marseille, France
Sebastian Parratte, MD, Marseille, France
Jean-Noel A. Argenson, MD, Marseille, France

Our study exhibits detrimental effect of simple freezing and freezing+irradiation on menisci's collagen network. Only cryopreservation process allows conservation of meniscus histological properties.

Poster No. P0933
Epidemiological Evaluation of Meniscal Ramp Lesions in 3,214 Anterior Cruciate Ligament Injured Knees: A Risk Factor Analysis and Study of Secondary Meniscectomy Rates Following 769 Ramp Repairs

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William Blakeney, MD, Montreal, QC, Canada
Herve Ouanezar, MD, Lyon, France
Thais D. Vieira, MD, Curitiba, Brazil
Vikram K. Kandhari, MBBS, Nagpur, India
Bertrand Sonnery-Cottet, MD, Lyon, France

This large series reports the epidemiology and risk factors for ramp lesions in the ACL injured knee. It also reports reoperation rates for failed ramp repair with a minimum follow up of two years.

Poster No. P0934
Outcomes of Arthroscopic Repair vs. Observation in Older Patients with Meniscal Root Tears

Jason L. Dragoa, MD, Redwood City, CA
Jaclyn A. Konopka, BS, Novi, MI

There was a significant improvement in all clinical outcome scores in the meniscal repair group but no significant improvement in the nonoperative group at 2 year follow up.

Poster No. P0935
Safe Depth for All-Inside Posterior Horn Lateral Meniscus Repair Using the Medial, Transpatellar, and Lateral Arthroscopic Portals

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Patrick A. Massey, MD, Shreveport, LA
Benjamin Feibel, MD, Shreveport, LA
Giovanni F. Solitro, PhD, Shreveport, LA
R. S. Barton, MD, Shreveport, LA

With increasing all-inside meniscus repairs performed, complications are of growing concern. The most dreaded of these, particularly in lateral meniscus repair, is injury to the neurovascular bundle.

Poster No. P0936
Secondary Meniscal Tears in Patients with Anterior Cruciate Ligament Injury: Relationship Between Operative Management, Osteoarthritis, and Arthroplasty at 18 Years Mean Follow Up

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Mario Hevesi, MD, Zumbrota, MN
Vishal Desai, BS, Rochester, MN
Thomas L. Sanders, MD, Rochester, MN
Timothy E. Hewett, PhD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Daniel B. Saris, MD, Ph D, Rochester, MN
Aaron J. Krych, MD, Rochester, MN


Poster No. P0937
Improvement of Stability in Meniscus Allograft Transplantation After Anterior Cruciate Ligament Reconstruction

Sanggyun Kim, Seoul, Republic of Korea
Kyoung Ho Yoon, MD, Seoul, Republic of Korea
Eungju Kim, Seoul, Republic of Korea
Jungsuk Kim, Seoul, Republic of Korea

Medial meniscus allograft transplantation can improve the anteroposterior and rotational stability when instability remains after ACL reconstruction with total meniscectomy.

Poster No. P0938
Long-Term Outcomes after Meniscal Allograft Transplantation: Comparison of Cases with Extrusion versus without Extrusion

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Seongil Bin, MD, PhD, Seoul, Republic of Korea
Bum-Sik Lee, MD, PhD, Seoul, Republic of Korea
Dangmin Lee, MD, Yangsan, Republic of Korea
Jun-Gu Park, MD, Seoul, Republic of Korea

Long-term follow up after MAT showed greater decrease in JSW in the extrusion group. However, no significant differences were observed between the two groups with clinical outcomes.

Poster No. P0939
Collagenous Ultrastructure of Torn Medial Meniscus Posterior Root: A Transmission Electron Microscopy Study

Si Young Song, MD, Hwaseong, Republic of Korea
Jeethyoung Kim, MD, Seoul, Republic of Korea
Myoungsoo Cha, Hwaseong, Republic of Korea
Young-Jin Seo, Prof, Hwasung, Republic of Korea

Torn MMPRs showed quantitatively and qualitatively disorganized collagen structure compared to intact MMPRs. This structural problem of torn MMPR could have negative effects on meniscal healing, function, and long-term survival.
Poster No. P0940
Biomechanical Effects of Nonanatomic Repair of the Posterior Root of the Lateral Meniscus
Ralph Zade, MD, Baltimore, MD
Vishal Mehta, DO, Baltimore, MD
Brent G. Parks, MSc, Baltimore, MD
James C. Dreese, MD, Timonium, MD

We tested the biomechanical effect of nonanatomic repair of the posterior root of the lateral meniscus with respect to contact pressure and contact area.

Poster No. P0941
Nonoperative Treatment of Elbow Ulnar Collateral Ligament Injuries in Professional Baseball Players: Understanding Outcomes by MRI Grade and Location of Tear
Aakash Chauhan, MD, San Diego, CA
Peter N. Chalmers, MD, Salt Lake City, UT
Peter McQueen, MD, Oak Park, IL
Christopher L. Camp, MD, Rochester, MN
Holis G. Potter, MD, New York, NY
Michael G. Cicotti, MD, Philadelphia, PA
John D’Angelo, BA, New York, NY
Stephen Fealy, MD, New York, NY
Jan Pronek, MD, La Jolla, CA

Lower MRI grade and humeral location are associated with better outcomes for professional baseball players when treating UCL injuries nonoperatively.

Poster No. P0942
Bilateral Radiographic Comparison of the Lateral Compartment Physeal Closure in Osteochondritis Dissecans of the Elbow
Hyung-Lae Cho, MD, Busan, Republic of Korea
Hyoung Min Kim, Busan, Republic of Korea
Yongseung Oh, Busan, Republic of Korea
Jiun Kim, Busan, Republic of Korea

Adolescent baseball players with capitellar OCD demonstrated accelerated radiocapitellar physeal closures in dominant elbow. Longer career length, more advanced lesions may exhibit premature closure.

Poster No. P0943
Magnetic Resonance Imaging of the Knee Before and After Marathon Running: A Prospective Cohort Study of 115 Participants
Laura M. Horga, London, United Kingdom
Johann Henckel, MD, London, United Kingdom
Anastasia Fotiadou, MD, PhD, Middlesex, United Kingdom
Anna Hirschmann, MD, Therwil, Switzerland
Camilla Torlasco, MD, Milan, Italy
James C. Moon, ACNP-BC, ATC, London, United Kingdom
Alister Hart, FRCS, London, United Kingdom

Most runners had knee abnormalities at baseline, and marathon running mostly affected the patello-femoral joint and only minimally affected the other knee compartments.

Poster No. P0944
The Recurrent Instability of the Patella Score: A Statistically-Based Model for Prediction of Long-Term Recurrence Risk after First-Time Dislocation
Maria Hevesi, MD, Zumbrota, MN
Mark J. Heidenreich, MD, Rochester, MN
Christopher L. Camp, MD, Rochester, MN
Timothy E. Hewett, PhD, Rochester, MN
Michael J. Stuart, MD, Rochester, MN
Diane L. Dahm, MD, Rochester, MN
Aaron J. Krych, MD, Rochester, MN

Patients who sustain a first-time, lateral patellar dislocation can be readily classified into low-, intermediate-, and high-risk categories employing the Recurrent Instability of the Patella Score.

Poster No. P0945
Systematic Review of Medial Patellofemoral Ligament Reconstruction Techniques: Comparison of Patellar Bone Socket and Cortical Surface Fixation Techniques
Aaron J. Krych, MD, Rochester, MN
Vishal Desai, BS, Rochester, MN
Adam J. Tagliero, MD, Rochester, MN
Chad W. Parkes, MD, Rochester, MN
Christopher L. Camp, MD, Rochester, MN
Nancy M. Cummings, MD, Minneapolis, MN
Michael J. Stuart, MD, Rochester, MN
Diane L. Dahm, MD, Rochester, MN


Poster No. P0946
Bone Bruise Patterns in Skeletally Immature Patients with Anterior Cruciate Ligament Injury: The Shock Absorbing Function of the Physis
Joao Novaretti, MD, Sao Paulo, Brazil
Jason Shin, MD, Moose Jaw, SK, Canada
Marcio B. Albers, MD, Pittsburgh, PA
Monique C. Chambers, MD, MSc, Pittsburgh, PA
Moises Cohen, MD, PhD, Sao Paulo, Brazil
Volker Musahl, Pittsburgh, PA
Freddie H. Fu, MD, Pittsburgh, PA

Patients with an open physis at the occurrence of an acute ACL rupture have unique bone bruise patterns compared to those with a closed physis.

Poster No. P0947
Pediatric Anterior Cruciate Ligament Repair with Internal Brace – Early Results
John Dabis, MBBS, Surrey, United Kingdom
Sam K. Yasen, MBBS, MSc, Basingstoke, United Kingdom
Michael J. Risebury, Basingstoke, United Kingdom
Adrian J. Wilson, FRCS (Ortho), MBBS, Basingstoke, United Kingdom

ACL repair in young children using this technique demonstrates the potential for excellent outcome as an attractive alternative to ACL reconstruction.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**THURSDAY - SATURDAY**

**Poster No. P0948**

Precollegiate Upper and Lower Extremity Injury is Associated with Higher Risk of Collegiate Injury in National Collegiate Athletic Association Division I Athletes

Danielle Greenberg, BA, Los Angeles, CA
James Chen, MD, Santa Monica, CA
Armin Arshi, MD, Los Angeles, CA
Wilson Lai, BS, San Francisco, CA
Jeremy Vail, ATC, PT, Los Angeles, CA
Sharon L. Hame, MD, Los Angeles, CA

History of precollegiate lower extremity (LE) injury and upper extremity (UE) injury are significant predictors of subsequent UE and LE injury, respectively, in NCAA Division I athletes.

**Poster No. P0949**

Differences in Strength, Power, and Rate of Force Development between Primary and Revision Anterior Cruciate Ligament Reconstructed Male Athletes at Nine Months from Surgery

David Carolan, BS, PT, Dublin, Ireland
Mark P. Jackson, FRCS MBBS, Dublin, Ireland
Enda King, MSc, PT, Dublin, Ireland
Raymond Moran, FRCS, Dublin, Ireland
Chris Richter, Dublin, Ireland
Andrew D. Franklyn-Miller, MBBS, Dublin, Ireland

Our study endeavors to investigate whether there are differences in the performance of primary and revision ACL reconstructed patients on objective physical criteria at 9 months postsurgery.

**Poster No. P0950**

Do Anatomic Changes Found in Pitching Elbow After a Season of Pitching Resolve with Offseason Rest: A Dynamic Ultrasound Study

Lafi Khalil, MD, Berkley, MI
Kelechi Okoroa, MD, Royal Oak, MI
Robert Matar, BS, MS, Canton, MI
Toufic R. Jildeh, MD, Royal Oak, MI
Joseph S. Tramer, MD, Berkley, MI
Chase Ansko, MD, Ferndale, MI
Vasilios Moutzourous, MD, Novi, MI

Throughout a season of pitching and subsequent offseason, adaptive changes seen on dynamic ultrasound of the dominant elbow may resolve to baseline with adequate offseason rest and rehabilitation.

**TRAUMA**

**P0951 – P1000**

**Poster No. P0951**

Provider-Induced Acute Traumatic Coagulopathy in Patients with Pelvic and Acetabular Trauma: Do We Need More Sophisticated Means to Guide Acute Resuscitation in the Emergency Department?

Adam Boissonneault, MBCHB, Atlanta, GA
Michael A. Maceroli, MD, Atlanta, GA
Christopher A. Staley, BA, Atlanta, GA
Amalie Erwood, BS, Atlanta, GA
Madeline Roobach, BA, Atlanta, GA
Richard Johnson, MD, Atlanta, GA
Mara L. Schenker, MD, Atlanta, GA

Vital signs are inadequate to drive resuscitation pathways in the emergency department for patients with pelvic and acetabular trauma.

**Poster No. P0952**

Outcome of Percutaneous Osseointegrated Prostheses for Patients with Transfemoral Amputation

Rainhold Roberto Garcia Straube, MD, Region Metropolitana, Chile
Carlos Rojas, MD, Santiago, Chile
Jose I. Laso, MD, Santiago, Chile
Alvaro Valenzuela, MD, Santiago, Chile
Rainhold Roberto Garcia Straube, MD, Region Metropolitana, Chile
Nicolas Gaggero, Santiago, Chile

Outcome of percutaneous osseointegrated prostheses for trauma patients with transfemoral amputation with five years follow up. Experience in a trauma center.

**Poster No. P0953**

Analysis of Current Advances in Fibular Plating Technology – Are the Increased Costs Justified?

Kevin McCarthy, MD, Tampa
Joseph Christensen, MD, Fresno, CA
Jordan Karsch, BA, Tampa, FL
Andrew Sephien, BS, Tampa, FL
Christopher Matson, MD, Boston, MA
Roy W. Sanders, MD, Tampa, FL
Hassan R. Mir, MD, MBA, Tampa, FL

Are increased costs justified with improved fibular plating technology?

**Poster No. P0954**

Treatment of Open Distal Tibia Intraarticular Fractures with Circular External Fixators: Multicenter Report of 57 Cases

Ahmed Thabet Hagag, MD, El Paso, TX
Christopher Gerzina, BS, El Paso, TX
Gautham Prabhakar, BA, El Paso, TX
Amr A. Abdelgawad, MD, El Paso, TX

A multicenter review of external fixation as a definitive method of fixation in open OTA 43 fractures.

**Poster No. P0955**

Assessment of Nutrition Beliefs and Practices among Orthopaedic Surgeons

Reza Firoozabadi, MD, Seattle, WA
Renan C. Castillo, MD, Baltimore, MD
Tara J. Taylor, MPH, Baltimore, MD
Joseph R. Hsu, MD, Charlotte, NC
Daniel J. Stinner, MD, Nashville, TN
William T. Obremskey, MD, MPH, Nashville, TN

Orthopaedic trauma surgeons believe that nutrition is very important in regards to outcomes; this study shows a clear lack of consensus and variability in practice among surgeons.

**Poster No. P0956**

Novel Educational Program Improves Readiness to Manage Intimate Partner Violence within the Fracture Clinic: A Pretest-Posttest Study

Sheila Sprague, PhD, Hamilton, ON, Canada
EDUCATE Investigators

We used a pretest-posttest design with a 3-month follow up to measure the effectiveness of an intimate partner violence educational program for fracture clinics.
**Poster No. P0957**

**Acute Hypovitaminosis D Following Skeletal Injury**

*Brandon Naylor, DO, Toledo, OH*
*Austin Moore, DO, Toledo, OH*
*Jacoby Jacobsen, DO, Toledo, OH*
*Richard M. Miller, DO, Maumee, OH*

Relatively little attention has been directed toward callus health resulting from nutritional status during the initial phases of bone healing. We sought to evaluate serum 25-hydroxy vitamin D [25(OH)D] trends in the immediate period following skeletal trauma surgery.

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**Poster No. P0958**

**Collagen Nanofibers with and without Bone Marrow Stromal Cells Enhances Bone Healing in a Rat Calvarial Bone Defect Model**

*David C. Markel, MD, Southfield, MI*
*Therese Bou-Aki, PhD, Dearborn, MI*
*Bin Wu, MD, Southfield, MI*
*Conor S. Daly-Seiler, MD, Detroit, MI*
*Mario D. Rossi, BS, Southfield, MI*
*Weiping Ren, MD, PhD, Detroit, MI*

Collagen nanofibers with and without bone marrow stromal cells used for repair of rat calvarial bone defect promoted guided bone regeneration.

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**Poster No. P0959**

**Prospective Isolation of Human Skeletal Stem Cells from Acute Fractures**

*Lawrence H. Goodnough, MD, Redwood City, CA*
*Thomas H. Ambrosi, MSc, PhD, Palo Alto, CA*
*Julius A. Bishop, MD, Palo Alto, CA*
*Michael J. Gardner, MD, Redwood City, CA*
*Michael T. Longaker, MD, Stanford, CA*
*Charles K. Chan, PhD, Palo Alto, CA*

We demonstrate the capability to prospectively isolate skeletal stem cells from acute human fractures, advancing our understanding of fracture healing from stem cell perspective in vivo in humans.

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**Poster No. P0960**

**Application of Cryotherapy to Long Arm Casts Reduces Skin Surface Temperature and Does Not Affect Moisture Levels at the Skin**

*Neal Goldenberg, San Francisco, CA*
*Paul Mead, MD, San Francisco, CA*
*Khalid I. Odeh, MD, San Francisco, CA*
*Giovanni Gajudo, MS, San Francisco, CA*
*Jeremi M. Leasure, MS, San Francisco, CA*
*Nirav K. Pandya, MD, Oakland, CA*

Application of cryotherapy to the surface of long arm casts significantly reduces skin temperature. Furthermore, application of cryotherapy has minimal effect on moisture content at the skin surface.

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**Poster No. P0961**

**Orthopaedic Trauma Quality Measures for Value-Based Healthcare Delivery**

*Malcolm DeBaun, MD, Menlo Park, CA*
*Michael J. Chen, MD, Palo Alto, CA*
*Julius A. Bishop, MD, Palo Alto, CA*
*Michael J. Gardner, MD, Redwood City, CA*
*Robin N. Kamal, MD, Redwood City, CA*

The purpose of this study was to assess the current portfolio of quality measures and candidate quality measures as it pertains to orthopaedic trauma surgery.

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**Poster No. P0962**

**Delaying Surgery for Hip Fracture Patients Increases Duration of Postoperative Opioid Use**

*Nicholas Kolodychuk, BS, MD, Gilbert, AZ*
*Spencer Walser, MPH, New Orleans, LA*
*Taylor V. Kline, MSc, Gilbert, AZ*
*Bhuimit Desai, BS, New Orleans, LA*
*James Mautner, MD, New Orleans, LA*

Delaying time to surgery more than 48 hours is associated with increased duration of opioid use.

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**Poster No. P0963**

**Are All Events Really Equal? Rethinking Composite Outcomes in Orthopaedic Trauma Research by Considering the Patients’ Preferences**

*Ugo Udogwu, BA, New York, NY*
*Andrea L. Howe, BS, Baltimore, MD*
*Isaac Marckenley, MS, Lauderdale Lakes, FL*
*Daniel Connelly, BS, Baltimore, MD*
*Dimitrius P. Marinos, BS, Baltimore, MD*
*Mitchell Baker, BS, Baltimore, MD*
*Gerard Slobogean, MD, MPH, Baltimore, MD*
*Robert V. O’Toole, MD, Lutherville, MD*
*Nathan N. O’Hara, Baltimore, MD*

This study quantifies patients’ relative importance towards component outcomes commonly used in orthopaedic trauma clinical research and incorporates them into a composite outcome weighting technique.

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**Poster No. P0964**

**Initiating a Diabetes Control Protocol in Orthopaedic Trauma Patients Can Predict Surgical Site Infections and Improve Long-Term Diabetes Management**

*Michael Reich, MD, El Paso, TX*
*Isaac Fernandez, MD, El Paso, TX*
*Abhinav Mishra, BS, El Paso, TX*
*Lisa Kafchinski, MD, El Paso, TX*
*Adam Adler, MD, El Paso, TX*
*Mai P. Nguyen, MD, El Paso, TX*

Orthopaedic trauma patients with uncontrolled diabetes are at increased risk of surgical site infections. Perioperative intervention can lead to long-term improvements in glucose control.

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**Poster No. P0965**

**Transfer Status in Geriatric Hip Fracture Surgery: An Independent Risk Factor Associated with 30-Day Mortality, Reoperations, and Complications**

*Azeem T. Malik, MBBS, Columbus, OH*
*Carmen E. Quatman, MD, PhD, Columbus, OH*
*Laura Phieffer, MD, Columbus, OH*
*Thuan V. Ly, MD, Columbus, OH*
*Nikhil Jain, MBBS, MD, Columbus, OH*
*Safdar N. Khan, MD, Columbus, OH*

Transfer status is an important risk factor associated with 30-day mortality and morbidity in geriatric patients undergoing hip fracture surgery.

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**Poster No. P0966**

**Aspirin is Associated with Increased Allogeneic Transfusions and Resource Utilization Following Hip Fracture Care**

*Afsahn Anoushiravani, MD, New York, NY*
*Zain Sayeed, MSc, Springfield, IL*
*Muhammad Padela, MD, MSc, North Chicago, IL*
*Benjamin Villacres Mori, BA, East Meadow, NY*
*Gonzalo Barinaga, MD, Springfield, IL*
*Paul J. Cagle, MD, New York, NY*

Our study suggests that aspirin is a safe and cost-effective option for thromboprophylaxis in hip fracture patients.

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*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.*
Poster No. P0967
Does Surgical Approach Influence the Outcomes following Total Hip Arthroplasty Performed for Displaced Intracapsular Hip Fractures? An Analysis from the National Joint Registry for England and Wales
Gulraj Matharu, MBCHB, Worcestershire, United Kingdom
Andrew Judge, PhD, Oxford, United Kingdom
Ashley Blom, FRCS (Ortho), MBCHB, Bristol, United Kingdom
Michael R. Whitehouse, PhD, FRCS (Tr & Ortho), Bristol, United Kingdom
In THA for hip fractures, the posterior approach had a similar risk of revision surgery, and a lower risk of mortality and intraoperative complications compared to the anterolateral approach.

Poster No. P0968
Alcohol Dependency is an Additional Risk Factor for Early Failures after Internal Fixation for Displaced Intracapsular Femoral Neck Fractures in Patients Less Than 60 Years Old
Chun-Hung Chang, Taipei, Taiwan
Cheng-Fong Chen, MD, Taipei, Taiwan
Po-Kuei Wu, MD, Taipei, Taiwan
The failure of internal fixation of displaced FNF < 60 years old is high. Optimal reduction and surgery in 6 hours yield better results. Alcohol dependency is an additional risk factor for early fail.

Poster No. P0969
Increased Number of Revision Procedures in Femoral Neck Fracture Fixation Supplemented with Calcium Sulfate Beads
Nicole E. George, DO, Towson, MD
Chukwuweike U. Gwam, MD, Greenbelt, MD
Jennifer I. Etcheson, MD, MS, Baltimore, MD
Iciar M. Davila Castrodad, MD, Baltimore, MD
Nequesha Mohamed, MD, Ajax, ON, Canada
Korie M. Griffith, MD, Detroit, MI
Spencer Smith, DO, Philadelphia, PA
James Nace, DO, PT, Cockeysville, MD
Ronald E. Delanois, MD, Baltimore, MD
The use of calcium sulfate beads in patients with femoral neck fractures did not improve subsequent infection rates and was associated with increased reoperations, and thus increased hospital costs.

Poster No. P0970
Suboptimal Vitamin D Levels Affects Two-Year Survival but not Short-Term Complications after Hip Fracture Surgery
Eric Wei Liang Cher, BS, MD, Singapore, Singapore
Ing How Moo, MD, Singapore, Singapore
John C. Allen, PhD, Star, ID
Chung Ean Lo, Singapore, Singapore
Bryan Peh, Singapore, Singapore
Ngai-Nung Lo, MD, Singapore, Singapore
Amit K. Mitra, Singapore, Singapore
Tet S. Howe, MD, Singapore, Singapore
Joyce S. Koh, MD, Outram Road, Singapore
Suboptimal Vitamin D level impacts 2-year survivorship after surgical fixation of hip fractures, alongside gender and CCI. The importance of vitamin D level opens further grounds for research.

Poster No. P0971
Patient-Centered Care: Total Hip Arthroplasty for Displaced Femoral Neck Fracture Does Not Increase Infection Risk
Abigail L. Campbell, MD, New York, NY
Ariana Lott, MD, Princeton, NJ
Leah Gonzalez, BS, New York, NY
Benjamin Kester, MD, New York, NY
Kenneth A. Egol, MD, New York, NY
Institutional and national data are utilized to compare elective THA to that performed for femoral neck fracture, specifically looking at complication rates.

Poster No. P0972
Treatment of Distal Femur Fractures with One Manufacturer's Variable Angle Locking Compression Plate
Tyler McDonald, Jackson, MS
Joella J. Lambert, BS, Jackson, MS
Robert M. Hulick, MD, Jackson, MS
Clay A. Spitter, MD, Madison, MS
Matthew L. Graves, MD, Jackson, MS
George V. Russell, MD, Jackson, MS
Patrick F. Bergin, MD, Madison, MS
One manufacturer's distal femur plate is a viable choice in the treatment of distal femur fracture, with similar failure rates to published norms of lateral locked plating.

Poster No. P0973
Does Obesity Increase the Complication Rate in Spica Casting for Pediatric Femur Fractures?
Robin Wolschendorf, Rochester Hills, MI
Daniel H. Havlichek, Dewitt, MI
Meghan Hill, BS, Grand Rapids, MI
Amil Jayasuriya, Grand Rapids, MI
Gerald E. Lilly, MPH, Portage, MI
Philip D. Nowicki, MD, Ada, MI
Obesity leads to greater malunion risk in spica cast treatment of pediatric femur fractures.

Poster No. P0974
Distal Metaphyseal Femoral Fractures - IM Nail vs. ORIF: Does Obesity Matter?
Lauren E. Karbach, MD, Rochester, NY
John P. Ketz, MD, Pittsford, NY
Treatment of distal metaphyseal femur fractures with either ORIF or IMN does not demonstrate significantly increased rates of malunion in obese patients.

Poster No. P0975
Retrograde Intramedullary Nailing versus Lateral Locked Plating for Complete Articular Distal Femur Fractures
Krishna C. Vemulapalli, BS, MD, Houston, TX
Stephen J. Warner, MD, PhD, Houston, TX
Timothy S. Achor, MD, Bellaire, TX
John W. Munz, MD, Houston, TX
Joshua L. Gary, MD, Houston, TX
Andrew M. Choo, MD, Houston, TX
John P. Ketz, MD, Pittsford, NY
Mark L. Prasarn, MD, Houston, TX
Fixation of the articular block and retrograde intramedullary nailing appears to be an effective treatment option for complete articular distal femur fractures with potentially lower nonunion rates.
**Poster No. P0976**  
Ambulatory Ability and Need for Additional Care One Year After Hip Fracture  
Ariana Lott, MD, Princeton, NJ  
Jack Haglin, BS, New York, NY  
Rebekah Belayneh, Alexandria, VA  
Sanjit R. Konda, MD, New York, NY  
Kenneth A. Egol, MD, New York, NY  

While much focus is placed on recovery in the initial months following hip fracture, the results of this study demonstrate the lasting effects of hip fractures in geriatric patients.

**Poster No. P0977**  
Risk Factors for Atypical Femur Fractures in a Large, Retrospective Cohort Study: A Multivariable Analysis from the Southern California Osteoporosis Cohort Study  
Erik J. Geiger, MD, San Francisco, CA  
Dennis Black, San Francisco, CA  
Bonnie Li, MS, Pasadena, CA  
Denison S. Ryan, MPH, Pasadena, CA  
Richard M. Dell, MD, Cypress, CA  
Annette L. Adams, PhD, Pasadena, CA  

In a large retrospective cohort, risk factors for AFF included Asian race, shorter height, glucocorticoid use, and bisphosphonate (BP) therapy; BP discontinuation was associated with decreased risk.

**Poster No. P0978**  
Comparison of Narcotic Use in Geriatric Hip Fracture Patients Undergoing Single-Shot or Continuous Fascia Iliaca Blocks  
Stephen Stephan, MD, West Hollywood, CA  
John Garlich, MD, Los Angeles, CA  
Landon S. Polakof, MD, Los Angeles, CA  
Christopher Johnson, MD, Los Angeles, CA  
Ali Noorzad, MD, Los Angeles, CA  
Dheeraj Yalamanchili, MD, Los Angeles, CA  
Eytan Debbi, MD, PhD, Los Angeles, CA  
Charles Moon, MD, Los Angeles, CA  
Milton T. Little, MD, Los Angeles, CA  

A prospective analysis of 263 geriatric hip fractures demonstrating no significant difference in narcotic use and pain scores between single-shot and continuous fascia iliaca blocks.

**Poster No. P0979**  
A Simple Tool to Trigger Early Palliative Care Consultations following Trauma  
Sanjit R. Konda, MD, New York, NY  
Kurtis D. Carlock, BS, New York, NY  
Jordan P. Hall, BS, New York, NY  
Jessica Mandel, BA, Miami, FL  
Kenneth A. Egol, MD, New York, NY  

Early palliative care consultation in orthopaedic trauma patients at high risk of inpatient mortality is associated with reduced inpatient mortality and major complication rate.

**Poster No. P0980**  
Demographic Trends in Operative Treatment of Humeral Shaft Fractures: Plate Fixation versus Intramedullary Nailing  
Eric Baranek, MD, New York, NY  
Hyunwoo P. Kang, MD, Los Angeles, CA  
Nicholas A. Trasolini, MD, Long Beach, CA  
David Trofa, MD, New York, NY  
Manish Noticewala, MD, Brooklyn, NY  
Christopher S. Ahmad, MD, New York, NY  

This is the single largest retrospective study to date comparing ORIF and IMN for surgically treated humerus fractures, analyzing differences in demographic trends, complication profiles, and costs.

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Amikacin may be an acceptable antibiotic for local delivery in PMMA for the treatment of gram negative infections that are resistant to currently used antibiotics.
Poster No. P0995
Long-Term Outcomes Following Anterior-Posterior Compression Pelvic Ring Injuries
Matthew D. Baron, MD, Seattle, WA  
Brian Cazan, BS, Loma Linda, CA  
Julie Agel, ATC, Seattle, WA  
Milton L. Routt, MD, Houston, TX  
Reza Firoozabadi, MD, Seattle, WA

Unstable pelvic ring disruptions are treated using a variety of surgical techniques including both internal and external fixation. Outcomes are similar despite type of operative treatment selected.

Poster No. P0996
The Efficacy of Fascia Iliaca Block in Geriatric Hip Fracture Patients: A Retrospective Matched Case Control Study
Kumaran Rasappan, MD, Singapore, Singapore  
Tjun Huat Ivan Chua, MD, MBBS, Singapore, Singapore

The FIB provides effective postoperative pain relief and a decrease in opioid usage without an increase in complication rate in the elderly with hip fractures.

Poster No. P0997
Evaluation of Lateral C-Arm Drape Contamination During Lower Extremity Fracture Surgery: A Prospective Pilot Study
Erin Haggerty, MD, Los Angeles, CA  
Bettina Ayers, MPH, Pasadena, CA  
David Hampton, MD, Washington, DC  
Charles Moon, MD, Los Angeles, CA  
Milton T. Little, MD, Los Angeles, CA  
Carol Lin, MD, MA, Los Angeles, CA

A pilot study seeking to quantify the sterility of the lateral C-arm drape using the clip drape technique and assess whether sterility correlates with duration of drape use or number of manipulations.

Poster No. P0998
Long-Term Functional Outcomes of Nonoperatively Treated Highly Displaced Scapula Body and Neck Fractures
Rebecca A. Rajfer, MD, Pittsburgh, PA  
Traci Salopek, Pittsburgh, PA  
Brian Mosier, MD, Pittsburgh, PA  
Gregory T. Altman, MD, Pittsburgh, PA

In this prospective cohort study, patients with severely displaced scapular neck and body fractures were treated nonsurgically, resulting in good patient satisfaction and long-term function.

Poster No. P0999
Traumatic Cervical Spinal Cord Injuries with Fracture: An Investigation of Early Versus Delayed Surgery among 6,636 Propensity-Matched Patients
Frank A. Segreto, BS, Oakdale, NY  
Cole Bortz, BA, New York, NY  
Samantha Horn, BA, New York, NY  
Joseph Baker, MD, Auckland, New Zealand  
Tomas Kuprys, MD, Atlanta, GA  
Matthew Gotlin, MD, New York, NY  
Bassel Diebo, MD, Brooklyn, NY  
Carl B. Paulino, MD, Brooklyn, NY  
Peter G. Passias, MD, Westbury, NY

SCI patients operated on the same day as admission were significantly less likely to develop infection, respiratory complications, or discharge to another care facility.

Poster No. P1000
Coronal Malalignment after Surgical Treatment of Tibial Plateau Fracture: The Incidence and the Effect on the Functional Outcome
Young Gon Na, MD, Incheon, Republic of Korea  
Dongwhan Lee, Incheon, Republic of Korea  
Kyung-Ok Kim, Incheon, Republic of Korea  
Jaegang Sim, MD, Incheon, Republic of Korea

After surgical treatment of tibial plateau fractures, a substantial proportion of coronal malalignment of the lower limbs can occur and it may adversely affect the functional outcome.

Poster No. P1001
Reduction Osteotomy Versus Pie-Crust Technique as Possible Alternatives for Medial Release in Total Knee Arthroplasty and Compared in a Prospective Randomized Controlled Trial
Ji Hyun Ahn, MD, Goyangsi, Republic of Korea  
Sangwoo Kim, Goyang City, Republic of Korea  
Kim Jaehyun, Goyang, Republic of Korea

Reduction osteotomy had a greater effect on extension gap widening than pie-crust technique, while pie-crust technique produced more effect on flexion gap widening than reduction osteotomy.

Poster No. P1002
Kinematic Analysis of Knee Joint in Sitting-Standing Motion Using Biplane Fluoroscopy in Osteoarthritic Knee Undergoing the Medial Opening Wedge High Tibial Osteotomy
Seung Suk Seo, MD, Busan, Republic of Korea  
Jeong-Hee Seo, MS, Daegu, Republic of Korea  
Ji-Eun Kim, RN, Busan, Republic of Korea

Sitting-standing motion in medial open wedge high tibial osteotomy was kinematically analysed using biplane fluoroscopy. Most significant changes occurred in abduction-adduction motion.

Poster No. P1003
Chondrogenic Gene (SOX-6, 9)-Transfected Adipose Stem Cell Therapeutics to Treat Osteoarthritis
Gun Il Im, Goyang, Republic of Korea  
Sangwoo Kim, Goyang City, Republic of Korea  
Kim Jaehyun, Goyang, Republic of Korea

Chondrogenic gene (SOX-6,9)- transfected human adipose stem cells were developed to treat osteoarthritis (OA) and injected intra-articularly in a surgically-induced OA caprine model. Mid-dose of 0.6 x 107 cells effectively arrested the OA progression.

Poster No. P1004
The Peek-a-Boo Heel Sign - Positive Subtle Cavovarus Deformity in Chronic Lateral Ankle Instability: Consecutive Diagnosis and Operation Results
Dongwoo Shim, MD, Seoul, Republic of Korea  
Jai Bum Kwon, MD, Seoul, Republic of Korea  
Kwang Hwan Park, MD, Seoul, Republic of Korea  
Jin Woo Lee, MD, Seoul, Republic of Korea  
Seung Hwan Han, MD, Seoul, Republic of Korea

Simultaneous correction of positive peek-a-boo heel sign cavovarus deformity with MBO in CLAI improves clinical outcomes and prevents recurrent instability.

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Poster No. P1005
Prognostic Factors Affecting Union after Ulnar Shortening Osteotomy in Ulnar Impaction Syndrome
Soo-Min Cha, Daejeon, Republic of Korea
Hyun Dae Shin, Daejeon, Republic of Korea
Woo-Yong Lee, MD, Jung-Gu, Republic of Korea
Low BMD, preoperative decreased wrist motion, and the double-blade mini-saw, when used at transverse osteotomy, were revealed as significant factors for an adverse radiologic outcome (nonunion/delayed union).

Poster No. P1006
Bone Tumor Resection Guide Using 3D Printing for Limb Salvage Surgery
Jong Woong Park, Goyang, Republic of Korea
Hyun-Gyu Kang, MD, Gyeong, Republic of Korea
June Hyuk Kim, MD, Goyang, Republic of Korea
Han-Soo Kim, MD, PhD, Seoul, Republic of Korea
The 3D-printed bone tumor resection guide is easy to use and shows promise in the precise resection and reconstruction with structural bone allograft or 3D-printed implant in orthopaedic oncology.

Poster No. P1007
Can We Predict the Subscapularis Tendon Tear with En-Face and Y-View Magnetic Resonance Imaging?
Jae Woo Shim, Seoul, Republic of Korea
Jeung Y. Jeong, MD, Seoul, Republic of Korea
Sanghoon Cha, Seoul, Republic of Korea
Hyunbo Sim, Seoul, Republic of Korea
Joohwan Kim, Seoul, Republic of Korea
Jae-Chul Yoo, MD, Seoul, Republic of Korea
There were several findings associated with large (type III or IV) tears of the subscapularis. The grading of BTL may modify suspicion of partial (IIB) tears of subscapularis.

Poster No. P1008
Does Additional Uncinate Resection Increase Pseudarthrosis Following Anterior Cervical Discectomy and Fusion?
Jong-Min Baik, Incheon, Republic of Korea
Deuk Soo Jun, MD, PhD, Incheon, Republic of Korea
Jaeeang Sim, MD, Incheon, Republic of Korea
Unilateral or bilateral UR does not affect the fusion rate after single- or double-level ACDF. Hence, if necessary, additional UR can be performed during ACDF without concern regarding nonunion.

Poster No. P1009
Volumetric Changes of Grafted Bone in Induced Membrane Technique Managing Critical Sized Defects of Long Bones
Jae-Woo Cho, Seoul, Republic of Korea
Wontae Cho, Seoul, Republic of Korea
Jong-Hyeop Song, Seoul, Republic of Korea
Jinkak Kim, MD, Seoul, Republic of Korea
Do Hyun Yeo, MD, Goyangsi, Republic of Korea
Beom-Soo Kim, MD, Seoul, Republic of Korea
Jong-Keon Oh, MD, PhD, Seoul, Republic of Korea
This study proved the reduced resorption rate of grafted bone in induced membrane technique for the treatment of critical sized bone defect.

Poster No. P1010
Early Postoperative Hypoalbuminemia is a Risk Factor for Postoperative Acute Kidney Injury following Hip Fracture Surgery
Kyun Ho Shin, MD, Seoul, Republic of Korea
Seung B. Han, MD, Seoul, Republic of Korea
The effects of early postoperative hypoalbuminemia were determined in patients with acute kidney injury following hip fracture surgery by retrospectively reviewing the medical records of 481 patients.

Poster No. P1011
Economic Burden of Pediatric Musculoskeletal Infection
Jonathan G. Schoenecker, MD, Nashville, TN
Ryan Koehler, MD, MS, Nashville, TN
Keith D. Baldwin, MD, Philadelphia, PA
Joshua S. Murphy, MD, Atlanta, GA
Lawson A. Copley, MD, Dallas, TX
Vidyadhar V. Upasani, MD, San Diego, CA
This study provides an estimate of the total costs associated with the treatment of pediatric MSKIs in the United States.

Disclosure information available via My Academy app and on the AAOS website at http://www.aaos.org/disclosure
ADULT RECONSTRUCTION HIP

Scientific Exhibit SE01
Multimodal Pain Management in Total Hip and Knee Arthroplasty: What Should be in the Cocktail?
Omar A. Behery, MD, New York, NY
Andrew M. Pepper, MD, New York, NY
John J. Mercuri, MD, MA, New York, NY
Tyler Luthringer, MD, New York, NY
Jonathan M. Vigdorhchik, MD, New York, NY

Given the significance of pain control in improving patient rehabilitation and satisfaction following total joint arthroplasty, and an opioid epidemic in the U.S., this exhibit is timely.

Scientific Exhibit SE02
How to Create a Patient-Specific Target for Acetabular Component Position in Total Hip Arthroplasty Defining the Functional Safe Zone
James Feng, MD, New York, NY
Nima Eftekhary, MD, New York, NY
Afshin Anoshiravan, MD, New York, NY
Daniel Wiznia, MD, Woodbridge, CT
Ran Schwarzkopf, MD, New York, NY
Jonathan M. Vigdorhchik, MD, New York, NY

We present our experience showing that the anatomic safe zone is not a one-size-fits-all concept, but rather, that the ideal acetabular component position is specific to each patient and allows for impingement-free movement throughout the patient’s entire range of motion.

Scientific Exhibit SE03
The SpinoPelvic Relationship Made Simple: What Every Hip Surgeon Needs to Know to Prevent Instability in High-Risk Patients Undergoing Total Hip Arthroplasty
Nima Eftekhary, MD, New York, NY
Ameer M. Elbuluk, MD, Los Angeles, CA
Jessica Morton, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY
Aaron Buckland, FRACS, New York, NY
Jonathan M. Vigdorhchik, MD, New York, NY

Understanding and evaluating spinoPelvic parameters in total hip arthroplasty. A stepwise protocol for evaluation and surgical decision making in patients with pre-existing spinal pathology.

Scientific Exhibit SE04
Non-Opioid Pain Management after Total Hip and Knee Arthroplasty: A Comprehensive Review and Multidisciplinary Approach
Nicole E. Durig, MD, Charlottesville, VA
Anna Cohen-Rosenblum, MD, Charlottesville, VA
Michelle Kew, MD, Charlottesville, VA
Ashley Shilling, MD, Charlottesville, VA
Thomas E. Brown, MD, Charlottesville, VA

This multimedia exhibit provides a comprehensive review of non-opioid pain control options following total hip and knee arthroplasty and one institution’s multimodal pain management protocol.

Scientific Exhibit SE05
A Review of the Design of Cemented and Cementless Femoral Stems in Total Hip Arthroplasty
Angelo Mannino, MD, Brooklyn, NY
Jason Wong, MD, New York, NY

This exhibit provides a review of the evolution of the design of femoral stems used in total hip arthroplasty as well as a review of the basic science of cemented and cementless femoral stems.

Scientific Exhibit SE06
Periacetabular Osteotomy: Perspectives, Considerations, Future Directions
Michael J. Moses, MD, New York, NY
Daniel B. Buchalter, MD, New York, NY
Roy Davidovitch, MD, New York, NY
Lazaros A. Poultsides, MD, MSc, New York, NY
Pablo Castaneda, MD, New York, NY
Jonathan M. Vigdorhchik, MD, New York, NY

The goal of this exhibit is to highlight and expand upon the current understanding of the role of periacetabular osteotomy for the treatment of symptomatic hip dysplasia.

Scientific Exhibit SE07
Arthroscopic Reconstruction of the Irreparable Acetabular Labrum: A Match-Controlled Study
Sivashankar Chandrasekaran, Denham Court, Australia
Nader Darwish, BS, Westmont, IL
Brian Mu, BA, Westmont, IL
Danil Rybalko, MD, Chicago, IL
Itay Perets, MD, Jerusalem, Israel
Edwin Chaharbakhshi, BS, Niles, IL
Benjamin G. Domb, MD, Glencoe, IL

Arthroscopic labral reconstruction is a safe and effective procedure for the treatment of irreparable segmental deficiencies of the labrum, associated with significant improvement in PROs at two years.

Scientific Exhibit SE08
Does Iliopsoas Lengthening Adversely Affect Clinical Outcomes? A Multi-Center Comparative Study of Hip Arthroscopy with and without Iliopsoas Fractional Lengthening
David R. Maldonado, MD, Elmhurst, IL
Aaron J. Krych, MD, Rochester, MN
Bruce A. Levy, MD, Rochester, MN
David E. Hartigan, MD, Phoenix, AZ
Joseph Laseter, BA, Westmont, IL
Benjamin G. Domb, MD, Glencoe, IL

This study confirmed that treatment with arthroscopic IFL, in the setting of FAI and a labral tear, is a safe procedure with good short to mid-term follow-up results and associated improvement in PROs.
Scientific Exhibit SE09
Development of a Preoperative Planning Computation Tool to Simulate Virtual Surgery, Predicting Postoperative Results
Manh Ta, MS, Knoxville, TN
Adrija Sharma, PhD, Knoxville, TN
Richard D. Komistek, PhD, Knoxville, TN
We expanded and implemented the capabilities of a validated theoretical model to function as an intraoperative virtual surgery planning and assessment tool.

Scientific Exhibit SE10
The Diagnostic Toolbox for Periprosthetic Hip and Knee Infection: A Comparison of Methods for Diagnosing Periprosthetic Joint Infection
Anas Saleh, MD, Westlake, OH
Assem Sultan, MD, Cleveland, OH
Linsen T. Samuel, MBA, MD, Floral Park, NY
Nicolas S. Piuszzi, MD, Shaker Heights, OH
Carlos A. Higuera Rueda, MD, Weston, FL
This scientific exhibit aims to inform the joint arthroplasty surgeon of the variety of tools and definitions currently available to help make or exclude the diagnosis of PJI.

Scientific Exhibit SE11
Management of Recurrent Hip Instability: From Preoperative Planning to Postoperative Protocols
Ameer M. Elbuluk, MD, Los Angeles, CA
David J. Mayman, MD, New York, NY
Seth A. Jerabek, MD, New York, NY
Peter K. Sculco, MD, New York, NY
Recurrent instability remains a challenging problem, however, recognition of the etiology combined with close scrutiny of patient and surgical risk factors can help to ensure successful treatment.

Scientific Exhibit SE12
Non-Opioid Modalities for Pain Control following Total Joint Arthroplasty
Thomas R. Hickernell, MD, New York, NY
Matthew Grosso, MD, Long Island City, NY
Elise Bixby, MD, New York, NY
Nana O. Sarpong, MD, Valley Stream, NY
Eugene Jang, MD, New York, NY
Roshan P. Shah, MD, JD, New York, NY
Jeffrey A. Geller, MD, New York, NY
Herbert J. Cooper, MD, New York, NY
A scientific exhibit reviewing the current literature as well as our institutional results regarding established and novel methods to reduce perioperative opioid use in total hip and knee arthroplasty.

Scientific Exhibit SE13
Does a Robotic-Assisted Total Knee Arthroplasty Improve Clinical Outcome in Young Patients?
Young-Hoo Kim, MD, Seoul, Republic of Korea
Sungwhan Yoon, Suwon, Republic of Korea
Jangwon Park, MD, MSc, San Diego, CA
A total of 124 knees in 108 pts. with robotic-assisted TKA and 124 knees in 108 pts. with conventional TKA had similar clinical and radiographic results and survivorship at 13 years follow up.

Scientific Exhibit SE14
Seth Stake, MD, Washington, DC
Safa C. Fassihi, MD, Washington, DC
Sean M. Kraekel, MD, Washington, DC
Savyasachi C. Thakkar, MD, Washington, DC
Monica Stadecker, MD, MBA, Washington, DC
Conversion TKA should be a defined procedure with a unique CPT code as it is associated with increased resource utilization, perioperative morbidity, and complication rates relative to primary TKA.

Scientific Exhibit SE15
Total Knee Arthroplasty in Post-Bariatric Surgery Patients - Outcomes Using Administrative Medicare Data
Menachem M. Meller, MD, Merion, PA
Norman A. Johanson, MD, Philadelphia, PA
Stuart B. Goodman, MD, Redwood City, CA
Aaron Y. Meller, BS, Merion Station, PA
Edmund Lau, MS, Menlo Park, CA
Mark H. Gonzalez, MD, Winnetka, IL
We look at 90-day costs and complications following TKA for patients who have undergone previous bariatric surgery.

Scientific Exhibit SE16
Antibiotic Prophylaxis with Low-Dose Intraosseous Regional Vancomycin in Total Knee Arthroplasty
Simon Young, MD, FRACS, Auckland, New Zealand
Henry D. Clarke, MD, Phoenix, AZ
Mark J. Spangehl, MD, Phoenix, AZ
IORA of low-dose vancomycin is an effective technique of administration in primary and revision TKA, resulting in tissue concentrations of vancomycin 6-20 times higher than systemic IV administration.
Scientific Exhibit SE17
Do Balanced Knees Perform Better Clinically? A Randomized Controlled Trial

**Alexander C. Gordon, MD, Prospect Heights, IL**
Gregory Golladay, MD, Richmond, VA
Thomas L. Bradbury, MD, Atlanta, GA
Ivan Fernandez-Madrid, MD, New York, NY
Viktor Erik Krebs, MD, Rocky River, OH
Preetesh D. Patel, MD, Weston, FL
Carlos A. Higuera Rueda, MD, Weston, FL
Wael K. Barsoum, MD, Weston, FL

A randomized controlled trial was conducted to assess the effect of a quantitatively balanced knee on patient reported outcomes, indicating significant improvements when quantitatively balanced.

Scientific Exhibit SE18
Design, Migration, and Early Clinical Results of the First Mass Produced 3D Printed Cementless Total Knee Implants

**Jim Nevelos, PhD, Mahwah, NJ**
Leanna Maclean, BScEng, Mabou, NS, Canada
Scott M. Sporer, MD, Wheaton, IL
Steven F. Harwin, MD, New York, NY
Denis Nam, MD, MSc, Chicago, IL
Ryan M. Nunley, MD, Saint Louis, MO
Arthur L. Malkani, MD, Louisville, KY

A novel, mass produced, 3D printed tibial component demonstrates very low migration as measured by RSA; time savings with no difference in pain or blood loss in an RCT, and excellent two-year outcomes.

Scientific Exhibit SE19
Spectrum of Constraint for Cruciate-Retaining Primary Total Knee Arthroplasty

**Adolph V. Lombardi, MD, New Albany, OH**
Noah T. Mallory, Columbus, OH
Joanne B. Adams, BFA, CMI, New Albany, OH
Keith R. Berend, MD, New Albany, OH

In 4,500 primary CR-TKA, no lipped or anterior stabilized bearings were revised for instability, but it was the most frequent cause for standard bearings. Kaplan-Meier survival was 96% at 14.1 years.

Scientific Exhibit SE20
Managing the Metaphyseal Defect in Revision Total Knee Arthroplasty: Porous Metaphyseal Sleeves or Tantalum Cones?

**Andrew J. Clair, MD, New York, NY**
Ryan Roach, MD, New York, NY
Omar A. Behery, MD, New York, NY
Savyasachi C. Thakkar, MD, Washington, DC
Richard Iorio, MD, Boston, MA
Ajit J. Deshmukh, MD, New York, NY

Understand the appropriate use, function, limitations, and techniques associated with porous metaphyseal sleeves and tantalum cones in the revision total knee arthroplasty with a metaphyseal defect.

Scientific Exhibit SE21
Management of Extra-Articular Deformity in the Setting of Total Knee Arthroplasty

**Cynthia A. Kahlenberg, MD, New York, NY**
Peter K. Sculco, MD, New York, NY
Austin T. Fragomen, MD, New York, NY
S. Robert Rozbruch, MD, New York, NY

Extra-articular deformities of the femur and tibia in conjunction with advanced knee osteoarthritis pose unique challenges for the arthroplasty surgeon.

Scientific Exhibit SE22
Does Patient Specific Total Knee Arthroplasty Add Value?

**Edward Morra, MSME, Cleveland, OH**
A. Seth Greenwald, DPhil Oxon, Cleveland Heights, OH

This study compares the influence of patient specific surgical procedures on component stability and polymer damage with the classic mechanical alignment approach.

FOOT AND ANKLE

Scientific Exhibit SE23
Gait Analysis and Footwear Design Applied to the Active Patient

**Abigail L. Campbell, MD, New York, NY**
Jessica Hooper, MD, New York, NY
Abidemi Adenikinju, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Steven C. Sheskier, MD, New York, NY

In this exhibit we provide an overview of gait analysis and translate this to an office setting. Shoe design in the context of anatomy is reviewed with a focus on the running shoe.

Scientific Exhibit SE24
Anterior and Posterior Ankle Impingement: Physical Examination Presentation, Imaging Findings, and Arthroscopic Management

**Brendan Emmons, BS, Atlanta, GA**
Kirk A. McCullough, MD, Leawood, KS
Eric Giza, MD, Sacramento, CA
Anne H. Johnson, MD, New York, NY
Jorge I. Acevedo, MD, Jacksonville, FL
Dominic S. Carreira, MD, Atlanta, GA

This exhibit provides a highly visual array of impingement lesions of the anterior and posterior ankle with a focus on diagnosis, imaging findings, and arthroscopic management.

Scientific Exhibit SE25
Ankle Syndesmosis Injuries

**Nicholas Yohe, MD, Brooklyn, NY**
Jadie E. Detolla, MD, Brooklyn, NY
Jordan B. Pasternack, MD, Brooklyn, NY
August Funk, MD, Brooklyn, NY
Nicholas G. Richardson, MD, Brooklyn, NY
Kevin Kang, MD, Brooklyn, NY

Syndesmotic injuries are complex with a high rate of malreduction. Surgeons should be aware of the high rate of malreduction postoperatively and the tools available to treat these injuries.

*The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
HAND AND WRIST

Scientific Exhibit SE26
Review of Microvascular Surgical Training Models and Implementation of a Novel, Low-Cost and Portable Model to Improve Resident Access to Microvascular Training
Stephen D. Zoller, MD, Los Angeles, CA
Kent Yamaguchi, MD, Santa Monica, CA
Armin Arshi, MD, Los Angeles, CA
Casimir Dowd, MD, Venice, CA

Microvascular training models are common in surgery but rare in orthopaedics. Here we review available models and the implementation of a novel, low-cost, portable model for orthopaedic residents.

MUSCULOSKELETAL ONCOLOGY

Scientific Exhibit SE27
Skin and Bones: Where Dermatology and Orthopaedic Surgery Overlap
Farhan Ahmad, BS, San Antonio, TX
Kavina Patel, BS, San Antonio, TX
Sandra Osswald, San Antonio, TX
Marc M. DeHart, MD, San Antonio, TX

This exhibit uses case presentations and photos and brief clinical summaries to highlight the dermatologic manifestations in orthopaedic diseases of microbial, autoimmune, and genetic origin.

PEDIATRICS

Scientific Exhibit SE28
First North American Hip Surveillance Program for Children with Cerebral Palsy: Program Development and Implementation
Stacey Miller, PT, Vancouver, BC, Canada
Maureen O'Donnell, MD, MSc, Vancouver, BC, Canada
Kishore Mulpuri, MBBS, MS, Vancouver, BC, Canada

This scientific exhibit describes the development and implementation of the first North American hip surveillance program for children with cerebral palsy.

Scientific Exhibit SE29
The Physis: Fundamental Knowledge to a Fantastic Future through Research
Todd A. Milbrandt, MD, Rochester, MN
Matthew A. Halanski, MD, Madison, WI

The histomorphometry of the physis is well defined, but bone growth regulation and optimal treatments for physeal disorders are unknown. This exhibit explores insights into the growth plate.

Scientific Exhibit SE30
Developmental Dysplasia of the Hip: Observations from a Multicenter Prospective Study
Charles T. Price, MD, Orlando, FL
Simon Kelley, MBChB, FRCS (Ortho), Toronto, ON, Canada
Travis H. Matheny, MD, Boston, MA
Kishore Mulpuri, MBBS, MS, Vancouver, BC, Canada
Wudbhav N. Sankar, MD, Wynnewood, PA
Emily Schaeffer, PhD, Vancouver, BC, Canada
Vidyadhar V. Upasani, MD, San Diego, CA
Harry K. Kim, MD, Dallas, TX
Young Jo Kim, MD, PhD, Boston, MA
Scott J. Mubarak, MD, San Diego, CA
James R. Kasser, MD, Boston, MA
Jose A. Herrera Soto, MD, Orlando, FL
International Hip Dysplasia Institute

Results from International Hip Dysplasia Institute and AAOS Clinical Practice Guidelines are presented in graphic and video formats with models for hip examination and Pavlik harness application.

PRACTICE MANAGEMENT/REHABILITATION

Scientific Exhibit SE31
Ethics of Pain Management: Opioids, Physicians, Patients, and Pharmaceuticals
Claudette M. Lajam, MD, New York, NY
John Cenname, New York, NY
Lorraine Hutzler, BA, New York, NY
Joseph A. Bosco III, MD, New York, NY

Physicians have a moral obligation to manage their patients' pain without putting them at risk for future addiction whenever possible.

Scientific Exhibit SE32
Combating the Opioid Crisis: Multidisciplinary Programs to Decrease Opioid Intake After Surgery
Jeffrey G. Stepan, MD, MSc, New York, NY
Francis Lovecchio, MD, New York, NY
Ajay Premkumar, MD, MPH, New York, NY
Cynthia A. Kahlenberg, MD, New York, NY
Hayley Sacks, BA, Mamaroneck, NY
Benedict U. Nwachukwu, MD, MBA, New York, NY
Todd J. Albert, MD, New York, NY

We present interventions and studies targeted at reducing opioid use at our hospital. Many of these simple interventions may be implemented at other institutions to help combat the opioid epidemic.
Scientific Exhibit SE33
Orthopaedics and the Opioid Crisis: The Current Regulatory Environment, and a Department-Wide Initiative Toward Decreasing the Narcotic Burden of Postoperative Patients
Devon J. Ryan, MD, New York, NY
Claudette M. Lajam, MD, New York, NY
Nader Paksima, DO, New York, NY
Lorraine Hutzler, BA, New York, NY
Lisa Anzisi PharmD, New York, NY
Joseph A. Bosco III, MD, New York, NY

This exhibit reviews a department-wide initiative that has successfully decreased opioid consumption while maintaining adequate postoperative pain control.

Scientific Exhibit SE34
Decreasing the Opioid Footprint in Total Joint Arthroplasty: One Institution’s Evidence-Based Progression Toward A Standardized Opioid Sparing Protocol
Andrew J. Clair, MD, New York, NY
Tyler Luthringer, MD, New York, NY
James Feng, MD, New York, NY
Richard Iorio, MD, Boston, MA
Joseph A. Bosco III, MD, New York, NY
James D. Slover, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY
William B. Macaulay, MD, New York, NY
Roy Davidovitch, MD, New York, NY

An evidence-based, standardized postoperative pain management protocol following total joint arthroplasty can maintain consistent clinical outcomes despite decreased opioid utilization.

Scientific Exhibit SE35
The Opioid Epidemic: What Every Orthopaedic Surgeon Needs to Know
Ameer M. Elbuluk, MD, Los Angeles, CA
Michael P. Ast, MD, New York, NY
Michael M. Alexiades, MD, Manhattan, NY
Michael B. Cross, MD, New York, NY
Peter K. Sculco, MD, New York, NY

New approaches to pain management are necessary to shift the current expectation of opioid use, alongside integration of quality metrics for performance improvement in pain management.

Scientific Exhibit SE36
Joints for Joint Pain: Does Cannabis have a Place in Pain Control?
Zlatan Cizmic, MD, Sterling Heights, MI
Alem Cizmic, Sterling Heights, MI
Jonathan M. Vigdorchik, MD, New York, NY
Roy Davidovitch, MD, New York, NY
Ran Schwarzkopf, MD, New York, NY
William J. Long, MD, New York, NY

As the U.S. continues to see an increase in cannabis use for medicinal purposes, an opportunity to improve pain control while decreasing opioid consumption exists.

Scientific Exhibit SE37
Role of Patient Expectations on Outcomes and Satisfaction after Orthopaedic Surgery
Ishaan Swarup, MD, New York, NY
Ryan Rauck, MD, New York, NY
Curtis M. Henn, MD, Washington, DC
Lawrence V. Gulotta, MD, New York, NY
R. Frank Henn, MD, Ellicott City, MD

In this exhibit, we describe the relationship between patient expectations and postoperative outcomes and satisfaction, as well as discuss the implications of this relationship to clinical practice.

Scientific Exhibit SE38
Value Proposition of Blood Management in Total Joint Arthroplasty
Claudette M. Lajam, MD, New York, NY
Matthew R. Boylan, MD, New York, NY
Lorraine Hutzler, BA, New York, NY
Joseph A. Bosco III, MD, New York, NY

Recent advances in blood management, however, have been able to decrease the need for perioperative transfusions, improving patient safety and decreasing costs.

Scientific Exhibit SE39
“Is there a Doctor Onboard?” The Plight of the In-Flight Orthopaedic Surgeon
Joseph P. Scollan, Brooklyn, NY
Song-Yi Lee, MD, Brooklyn, NY
Neil V. Shah, MD, MS, New York, NY
Qais Naziri, MD, MBA, Brooklyn, NY

We report on the ethical and legal responsibilities of all physicians for the most common in-flight emergencies, suggesting treatment plans for the practicing orthopaedic surgeon.

Scientific Exhibit SE40
Ultrasound Use in Orthopaedics for Diagnosis and Therapeutics: Trend and Cost
Charles D. Qin, MD, Chicago, IL
William Mosenthal, MD, Chicago, IL
Jason L. Koh, MD, Winnetka, IL
George S. Athwal, MD, London, ON, Canada
Lewis L. Shi, MD, Chicago, IL

This exhibit seeks to educate orthopaedic surgeons on the evolving application of ultrasound for both diagnostic and therapeutic use.

Scientific Exhibit SE41
From Meloxicam to Methylprednisolone: Antiinflammatory Strategies for the Orthopaedic Surgeon
Arthur Manoli, MD, Detroit, MI
Michael H. Pillinger, MD, New York, NY
Nicholas Bolz, MD, Detroit, MI
Jacob Markel, BS, Madison Heights, MI
Natalie M. Pizzimenti, MS, Novi, MI
David C. Markel, MD, Southfield, MI

A knowledge of antiinflammatory treatment strategies can help orthopaedic surgeons more effectively reduce pain, facilitate functional recovery, and promote early rehabilitation.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
**Scientific Exhibit SE42**  
**Management of the Patient with Failed Shoulder Instability Procedures: A Treatment Algorithm**  
Christopher Joyce, MD, Aurora, CO  
Robin H. Dunn, MD, Denver, CO  
Darby A. Houck, Boulder, CO  
Jonathan T. Bravman, MD, Golden, CO  
Adam J. Seidl, MD, Aurora, CO  
Armando F. Vidal, MD, Denver, CO  
Eric C. McCarty, MD, Boulder, CO  
Michelle Wolcott, MD, Denver, CO  
Rachel M. Frank, MD, Boulder, CO

This exhibit gives a comprehensive review of the current techniques for failed shoulder instability procedures to help surgeons provide an evidence-based treatment algorithm.

**Scientific Exhibit SE43**  
**From the Grammont Prosthesis to the Contemporary Reverse Arthroplasty: Evolution of the Design of Reverse Total Shoulder Arthroplasty**  
Giovanni Merolla, MD, Cattolica, Italy  
John W. Sperling, MD, MBA, Rochester, MN  
Joaquin Sanchez-Sotelo, MD, Rochester, MN  
Thomas R. Duquin, MD, Buffalo, NY  
Philipp Moroder, MD, Berlin, Germany  
Samuel A. Antuna, MD, Madrid, Spain  
Jacobo Kirsch, MD, Ann Arbor, MI  
Gilles Walch, MD, Lyon, France  
Giuseppe Porcellini, MD, Modena, Italy  
Paolo Paladini, MD, Cattolica, Italy  
Reverse Total Shoulder Arthroplasty Study Group

From the Grammont prosthesis to the contemporary reverse arthroplasty: evolution of the design of reverse total shoulder arthroplasty.

**Scientific Exhibit SE44**  
**Preoperative Planning and Patient-Specific Instrumentation in Total Shoulder Arthroplasty**  
Brandon C. Cabarcas, BS, Hialeah, FL  
Gregory L. Cvetanovich, MD, Columbus, OH  
Anirudh K. Gowd, Cary, NC  
Brandon Erickson, MD, New York, NY  
Michael D. Charles, MD, Chicago, IL  
Brandon Manderle, Chicago, IL  
Gregory P. Nicholson, MD, Chicago, IL  
Nicholas A. Romeo, MD, Chicago, IL  
Saara Ketola, MD, Tampere, Finland

Surgeons performing TSA should maintain an understanding of patient-specific technologies and consider implementing them in more complex cases to achieve the best possible glenoid position.

**Scientific Exhibit SE45**  
**Approaching Glenoid Bone Loss in Recurrent Shoulder Instability**  
Benjamin Hendy, MD, Philadelphia, PA  
Eric M. Padegimas, MD, Philadelphia, PA  
Surena Namdari, MD, MSc, Philadelphia, PA  
Charles L. Getz, MD, Newton Square, PA  
John G. Horneff, MD, Philadelphia, PA

We present our institutional experience managing glenoid bone loss in recurrent anterior shoulder instability.

**Scientific Exhibit SE46**  
**Propionibacterium Acnes: Contamination, Colonization, or Infection?**  
Vahid Entezari, MD, Beachwood, OH  
Jason Ho, MD, Cleveland, OH  
Surena Namdari, MD, MSc, Philadelphia, PA  
Joseph A. Abboud, MD, Philadelphia, PA  
Gerald R. Williams, MD, Philadelphia, PA  
Mark D. Lazarus, MD, Philadelphia, PA

P. acnes is the most commonly isolated bug from revision shoulder arthroplasty and linked to periprosthetic infection. We review the literature around p. acnes contamination, colonization, or infection.

**Scientific Exhibit SE47**  
**Management of Glenoid Deficiency in Shoulder Arthroplasty**  
Kiera Kingston, MD, Chicago, IL  
Alexander T. Bradley, MD, Chicago, IL  
Connor A. King, MD, Chicago, IL  
Eugene Ek, MD, PhD, Melbourne, Australia  
Thomas B. Edwards, MD, Houston, TX  
Lewis L. Shi, MD, Chicago, IL

Glenoid bone loss in primary and revision TSA requires proper evaluation and management with the goal of restoring the bony deficiency to allow for implantation of a balanced shoulder arthroplasty.

**Scientific Exhibit SE48**  
**Salvage of Failed Hemi- and Total to Reverse Shoulder Arthroplasty: Clinical Improvement despite Increased Short-Term Risk of Reoperation**  
Brian R. Waterman, MD, Winston Salem, NC  
Shelby A. Sumner, BS, MPH, Chicago, IL  
Jon M. Newgren, MA, Chicago, IL  
Michael C. O’Brien, MA, Chicago, IL  
Anthony A. Romeo, MD, Chicago, IL  
Gregory P. Nicholson, MD, Chicago, IL

Exploring the clinical results, patient-reported outcomes, and survivorship of conversion RTS after failed anatomic arthroplasty.

**Scientific Exhibit SE49**  
**The Effectiveness and Cost-Effectiveness of Arthroscopic Acromioplasty in the Treatment of Anterolateral Shoulder Pain**  
Saara Ketola, MD, Tampere, Finland

Arthroscopic acromioplasty is not effective, nor cost-effective, in the treatment of anterolateral shoulder pain when analyzed at 2, 5, and 12 years in this randomized controlled study of 140 patients.
Scientific Exhibit SE50
Horizontal Instability of the Acromioclavicular Joint: A Systematic Review
Gianna Aliberti, New Orleans, LA
Matthew J. Kraeutler, MD, Cedar Grove, NJ
Jeffrey D. Trojan, MS, New Orleans, LA
Mary K. Mulcahey, MD, New Orleans, LA
This exhibit seeks to educate orthopaedic surgeons on the diagnosis, evaluation, and treatment of horizontal instability of the AC joint.

Scientific Exhibit SE51
Acromioclavicular Reconstruction: Systematic Review and Meta-Analysis of Operative Techniques
Anirudh K. Gowd, Cary, NC
Joseph Liu, MD, Chicago, IL
Brandon C. Cabarcas, BS, Hialeah, FL
Gregory L. Cvetanovich, MD, Columbus, OH
Grant Garcia, MD, Mercer Island, WA
Nikhil N. Verma, MD, Chicago, IL
A myriad of acromioclavicular reconstruction techniques have been reported in the literature. The present study examines differences in complication rates, loss of reduction, and revision rates.

Scientific Exhibit SE52
Muscle Transfers Around the Shoulder: Diagnosis, Treatment, and Surgical Technique
Joseph W. Galvin, DO, Clarksville, TN
Robert L. Parisien, MD, Boston, MA
Emily Curry, Boston, MA
Jean Kang, MD, Allston, MA
Stephen A. Parada, MD, Augusta, GA
Josef K. Eichinger, MD, Charleston, SC
Asheesh Bedi, MD, Ann Arbor, MI
Bassem T. Elhassan, MD, Rochester, MN
Xinning Li, MD, Weston, MA
Muscle transfers around the shoulder, although rarely performed procedures, are effective in normalization of glenohumeral and scapulothoracic kinematics and restoration of motion and function.

SPINE
Scientific Exhibit SE53
Spine Implant Surface Technology: Current Knowledge and Future Directions
John Buza, MD, New York, NY
Rivka C. Ihejirika, MD, New York, NY
Karan Patel, MD, New York, NY
Aaron Buckland, FRACS, New York, NY
Charla R. Fischer, MD, New York, NY
Peter G. Passias, MD, Westbury, NY
Themistocles S. Protopsaltis, MD, New York, NY
This exhibit reviews the current principles of spinal implant surface technology and introduces the future use of nanotechnology surfaces in achieving spinal fusion.

Scientific Exhibit SE54
A Novel Posterior Rod-Link-Reducer System for Surgical Correction of Severe Scoliosis
Daniel J. Sucato, MD, MS, Dallas, TX
Hong Zhang, MD, Dallas, TX
A new rod link reducer (RLR) technique has been developed to provide outstanding corrective control for severe spinal deformities. A retrospective review of 18 cases utilizing the RLR versus 18 cases using the traditional corrective technique (TCT) performed

Scientific Exhibit SE55
Mechanomyography is Superior to Electromyography in Mapping and Locating Nerves at Risk During Spinal Surgery
Stephen Bartol, MD, Wixom, MI
Courtney E. Henderson, DVM, MS, Cincinnati, OH
Christopher D. Wybo, MS, Southfield, MI
In porcine and sheep models MMG was found to be more sensitive than EMG for pedicle screw placement. MMG also varied precisely with current and distance, allowing determination of a safe working zone.

Scientific Exhibit SE56
Options for Improved Pedicle Screw Fixation in Osteoporotic Bone
Daniel Komlos, MD, PhD, Brooklyn, NY
Ahmed Saleh, MD, Brooklyn, NY
To provide a comprehensive review of various compounds and techniques to improve pedicle screw fixation in osteoporotic bone.

Scientific Exhibit SE57
Attack of the Clones: Updates in Robotic Spine Surgery
Matthew Ciminero, MD, Brooklyn, NY
Jordan B. Pasternack, MD, Brooklyn, NY
Michael J. Collins, MD, Brooklyn, NY
Ahmed Saleh, MD, Brooklyn, NY
This scientific exhibit provides not only a review of the current robotic assisted spine surgery systems available, but also discusses the possible future directions of these systems and how they may evolve.

SPORTS MEDICINE
Scientific Exhibit SE58
Sports-Related Concussions: Comprehensive Strategy for Proper Diagnosis and Management in NCAA Setting
Jason Hu, MD, Fresh Meadows, NY
Justin Classie, MD, Fresh Meadows, NY
Alexander Golant, MD, Flushing, NY
Jeffrey E. Rosen, MD, Roslyn Heights, NY
Sports-related concussion (SRC) management involves a multifaceted approach. The 2017 consensus statement provides an overview for the management of SRC to ensure safe return to play for athletes.

* The FDA has not cleared the drug and/or medical device for the use described in this presentation (i.e. the drug or medical device is being discussed for an off label use). For full information refer to page 17.
Scientific Exhibit SE59
Single Sport Specialization in Youth Sports: Do You Need to Specialize?
Patrick S. Buckley, MD, Philadelphia, PA
Meghan E. Bishop, MD, Philadelphia, PA
Michael C. Ciccotti, MD, Haverford, PA
William D. Emper, MD, Bryn Mawr, PA
Kevin B. Freedman, MD, Bryn Mawr, PA
Sommer Hammoud, MD, Philadelphia, PA
Steven B. Cohen, MD, Media, PA
Fotios P. Tjoumakaris, MD, Ocean View, NJ
Michael G. Ciccotti, MD, Philadelphia, PA

This scientific exhibit summarizes the scientific evidence available regarding the risks and benefits of early youth sports specialization.

Scientific Exhibit SE60
Pain Management Strategies After Shoulder Arthroscopy
Andrew Maye, Dublin, Ireland
Eoghan Hurley, MBCHB, Dublin, Ireland
Utkarsh Anil, BA, New York, NY
Leo Pauzenberger, MD, Vienna, Austria
Eric J. Strauss, MD, Scarsdale, NY
Hannan Mullett, FRCS (Ortho), Dublin, Ireland
Cathal Moran, MD, Dublin, Ireland
Gerard F. Curley, MBCHB, PhD, Dublin, Ireland

This exhibit provides an overview of the best available evidence to help surgeons optimize patient outcomes in terms of pain management following shoulder arthroscopy.

Scientific Exhibit SE61
Quadriceps Tendon Autograft for Anterior Cruciate Ligament Reconstruction
Eoghan Hurley, MBCHB, Dublin, Ireland
Daniel Withers, FRCS (Ortho), MBCHB, Portmarnock, Ireland
Connor Montgomery, Dublin, Ireland
Daire Hurley, Dublin, Ireland
Mark P. Jackson, FRCS MBBS, Dublin, Ireland
Cathal Moran, MD, Dublin, Ireland
Raymond Moran, FRCS, Dublin, Ireland

This exhibit provides an overview of the best available evidence on quadriceps-tendon autograft for ACL reconstruction.

Scientific Exhibit SE62
A Comprehensive Study on the Anterolateral Ligament of the Knee
Andrea Ferretti, MD, Rome, Italy
Andrea Redler, MD, Rome, Italy
Giuseppe Argento, MD, Rome, Italy
Matthew Daggett, DO, Lees Summit, MO
Fabio Conteduca, MD, Roma, Italy
Piergiorgio Drogo, MD, Rome, Italy
Edoardo Monaco, MD, Rome, Italy

Do we know the anterolateral ligament and what its role is? The aim of our investigation is to know it better.

Scientific Exhibit SE63
Management of SLAP Lesions: When is Biceps Tenodesis Indicated?
Nina Fisher, BS, New York, NY
Andrew J. Clair, MD, New York, NY
Eric J. Strauss, MD, Scarsdale, NY

This Scientific Exhibit reviews the current evidence supporting the use of biceps tenodesis in increasingly younger patients presenting with type II SLAP lesions.

Scientific Exhibit SE64
Blood Flow Restriction Therapy in the Management of Athletic Injuries
Andrew J. Curley, MD, Washington, DC
Christine Conroy, New Rochelle, NY
Austin M. Looney, MD, Washington, DC
Jacob Israel, BA, Washington, DC
Caroline Fryar, Washington, CT
Seth Blee, DPT, Fairfax, VA
Robin Vereeke West, MD, Great Falls, VA
Edward Chang, MD, Washington, DC

Prior to utilizing BFR therapy in practice, orthopaedists should be aware that, despite promising data from numerous basic science papers, clinical outcome studies are limited and have mixed results.

Scientific Exhibit SE65
Osteotomies About the Knee: Pros, Cons, and Technical Pearls
Anant Dixit, MD, Brooklyn, NY
Alfonso Arevalo, DO, Philadelphia, PA
Danielle G. Weekes, MD, Egg Harbor Township, NJ
Kevin B. Freedman, MD, Bryn Mawr, PA
Christopher Dodson, MD, Philadelphia, PA
Fotios P. Tjoumakaris, MD, Ocean View, NJ
Steven B. Cohen, MD, Media, PA
Michael G. Ciccotti, MD, Philadelphia, PA
Sommer Hammoud, MD, Philadelphia, PA

This Scientific Exhibit focuses on reviewing the osteotomies around the knee including the high tibial osteotomy (HTO), distal femoral osteotomy (DFO), and tibial tubercle osteotomy (TTO).

Scientific Exhibit SE66
Save the Meniscus: A Study of Tears, Propagation, Repairs, and Reconstruction
Joao Novaretti, MD, Sao Paulo, Brazil
Jayson Lian, Bronx, NY
Elmar Herbst, MD, Pittsburgh, PA
Thomas R. Pfeiffer, MD, Köln, Germany
Calvin Chan, MS, Pittsburgh, PA
Freddie H. Fu, MD, Pittsburgh, PA
Richard E. Debski, PhD, Pittsburgh, PA
Volker Musahl, Pittsburgh, PA

Four robotic and two clinical studies were performed for a comprehensive evaluation of the meniscus.
### Scientific Exhibit SE67

**The Multifactorial Genesis of Rotatory Knee Laxity**

Jayson Lian, Bronx, NY

- Thomas R. Pfeiffer, MD, Köln, Germany
- Eleonor Svantesson, Gothenburg, Sweden
- Eric Hamrin Senorski, MSc, PhD, Västra Frölunda, Sweden
- Joao Novaretti, MD, Sao Paulo, Brazil
- Philip P. Roessler, MD, Pittsburgh, PA
- Yuichi Hoshino, MD, Kobe, Japan
- Neel Patel, MD, Pittsburgh, PA
- Amir Ala Rahnemai Azar, MD, Pittsburgh, PA
- Mattias Ahliden, MD, Gothenburg, Sweden
- Haukur Björnsson, MD, Gardabaer, Iceland
- Neel Desai, MD, Molndal, Sweden
- Daniel Guenther, MD, Hannover, Germany
- Joanna Costello, MD, Pittsburgh, PA
- Masahiro Kurosaka, MD, Kobe, Japan
- Nicola Lopomo, MSc, PhD, Bologna, Italy
- Alicia Oostdyk, MPH, Greenville, SC
- Cecilia Signorelli, MS, Bologna, Italy
- Justin W. Arner, MD, Pittsburgh, PA
- Jason Zlotsnicki, MD, Pittsburgh, PA
- Jeremy M. Burnham, MD, Baton Rouge, LA
- Andrew J. Sheean, MD, Pittsburgh, PA
- Adam Popchak, DPT, PhD, Pittsburgh, PA
- Elmar Herbst, MD, Pittsburgh, PA
- Paulo H. Araujo, MD, Brasilia, Brazil
- Fabio V. Arilla, MD, Estancia Velha, Brazil
- Bruno Ohashi, Brasilía, Brazil
- Michaela Kopka, MD, Canmore, AB, Canada
- Kouki Nagamune, PhD, Fukui, Japan
- Alberto Grassi, MD, Bologna, Italy
- Giulio Maria Marcheggiani Muccioli, MD, Bologna, Italy
- David S. Sundemo, MD, Gothenburg, Sweden
- Federico Raggi, MD, Bologna, Italy
- Ryosuke Kuroda, MD, Kobe, Japan
- Stefano Zaffagnini, MD, Bologna, Italy
- Jon Karlsson, MD, Gothenburg, Sweden
- Kristian Samuelsson, MD, PhD, Molndal, Sweden
- James J. Irrgang, PhD, Pittsburgh, PA
- Freddie H. Fu, MD, Pittsburgh, PA
- Volker Musahl, MD, Pittsburgh, PA
- PIVOT Study Group

Rotatory knee laxity is a product of anterior cruciate ligament deficiency, injury to the menisci, and/or anterolateral complex, and variation in tibiofemoral bony morphology.

### Scientific Exhibit SE68

**The Management of Elbow Injuries in the Adolescent Overhead Athlete**

Austin M. Looney, MD, Washington, DC

- Jacob Israel, BA, Washington, DC
- Andrew J. Curley, MD, Washington, DC
- Blake Bodendorfer, MD, Washington, DC
- Christine Conroy, New Rochelle, NY
- Caroline Fryar, Washington, CT
- Edward Chang, MD, Washington, DC

Increased specialization among adolescent overhead athletes has led to a rise in elbow injuries. Providers must be prepared to manage injuries that vary according to the stage of skeletal maturity.

### Scientific Exhibit SE69

**Management of Bone Tunnels in Revision Anterior Cruciate Ligament Reconstruction**

Theodore S. Wolfson, MD, New York, NY

- Mathew Hamula, MD, New York, NY
- Samuel Baron, West Hartford, CT
- Kamali Thompson, Teaneck, NJ
- Kirk A. Campbell, MD, New York, NY
- Eric J. Strauss, MD, Scarsdale, NY
- Laith M. Jazrawi, MD, New York, NY
- Volker Musahl, MD, Pittsburgh, PA
- Michael J. Alaia, MD, New York, NY

Revision ACL reconstruction is often complicated by bone tunnel issues. This exhibit reviews the evaluation and management of these complications from preoperative planning to intraoperative execution.

### Scientific Exhibit SE70

**Fresh Osteochondral Allograft Transplantation: Our Experience with 20 Years of Translational Research**

William Bugbee, MD, San Diego, CA

- Andrea L. Pallante-Kichura, PhD, San Diego, CA
- Simon Gortz, MD, Phoenix, AZ
- Pamela A. Pulido, RN, BSN, La Jolla, CA
- Julie C. McCauley, La Jolla, CA
- David Amiel, PhD, San Diego, CA
- Robert Sah, MD, ScD, La Jolla, CA

Our comprehensive studies of OCA transplantation have led to adoption of this technology in orthopaedic surgical practice worldwide, benefiting patients with difficult articular cartilage problems.

### Scientific Exhibit SE71

**Management of Massive Rotator Cuff Tears without Arthroplasty**

Anant Dixit, MD, Brooklyn, NY

- Richard E. Campbell, BS, Philadelphia, PA
- Alfonso Arevalo, DO, Philadelphia, PA
- Sommer Hammoud, MD, Philadelphia, PA
- Christopher Dodson, MD, Philadelphia, PA
- Kevin B. Freedman, MD, Bryn Mawr, PA
- Steven B. Cohen, MD, Media, PA
- Michael G. Cicotti, MD, Philadelphia, PA
- Fotios P. Tjoumakaris, MD, Ocean View, NJ

This scientific exhibit focuses on reviewing the current nonarthroplasty surgical options for massive irreparable rotator cuff tears.

### Scientific Exhibit SE72

**Demystifying the Athlete’s Hip: Tips, Tricks, and Pearls in the Management of Athletic Hip Conditions**

Thomas S. Lynch, MD, New York, NY

- James Irvine, MD, Pittsburgh, PA
- Michaela J. O'Connor, BA, New York, NY
- Kirk A. Campbell, MD, New York, NY
- James J. Irrgang, PhD, Pittsburgh, PA
- Kevin B. Freedman, MD, Bryn Mawr, PA
- Elmar Herbst, MD, Pittsburgh, PA
- Adam Popchak, DPT, PhD, Pittsburgh, PA
- Andrew J. Sheean, MD, Pittsburgh, PA
- Jeremy M. Burnham, MD, Baton Rouge, LA
- Andrew J. Curley, MD, Washington, DC
- Blake Bodendorfer, MD, Washington, DC
- Christine Conroy, New Rochelle, NY
- Caroline Fryar, Washington, CT
- Edward Chang, MD, Washington, DC
- Jacob Israel, BA, Washington, DC
- Andrew J. Curley, MD, Washington, DC
- Blake Bodendorfer, MD, Washington, DC
- Christine Conroy, New Rochelle, NY
- Caroline Fryar, Washington, CT
- Edward Chang, MD, Washington, DC

This exhibit focuses on the complexity of the athlete’s hip with emphasis on clinical pearls, injury management, and rehabilitation/return to play.

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Scientific Exhibit SE73
Biological Treatment Options for Ligament Injury: What Have We Achieved and What is Next?
Zaamin Hussain, BA, Vail, CO
Jorge Chahla, MD, PhD, Santa Monica, CA
Iain Murray, MD, PhD, Edinburgh, United Kingdom
Robert F. LaPrade, MD, PhD, Chanhassen, MN
A summary of the latest evidence of the biological treatment options for ligament injury, including ligament biology, healing, basic science studies, translation work, and clinical studies.

Scientific Exhibit SE74
The Baseball Athlete from the Hips to the Fingertips: Injury Evaluation, Treatment, and Prevention
Thomas S. Lynch, MD, New York, NY
James Irvine, MD, Pittsburgh, PA
Julian Sonnenfeld, MD, Aberdeen, NJ
Michaela J. O’Connor, BA, New York, NY
Christopher S. Ahmad, MD, New York, NY
This exhibit provides a review of the most common injuries sustained by baseball athletes, with emphasis on injury management and prevention for the adolescent and high-level athlete.

Scientific Exhibit SE75
Everything You Need to Know About Glenoid Bone Loss: Understanding the Glenoid Track
James Liu, MD, New York, NY
Samuel Baron, West Hartford, CT
Kamali Thompson, Teaneck, NJ
Guillem Gonzalez-Lomas, MD, New York, NY
Laith M. Jazrawi, MD, New York, NY
Giovanni Di Giacomo, MD, Roma, Italy
Eiji Itoi, MD, Sendai, Japan
Stephen S. Burkhardt, MD, San Antonio, TX
Kirk A. Campbell, MD, New York, NY
Our review can significantly improve the understanding of the operative management of shoulder instability and the appropriate use of the diagnostic and surgical techniques for glenoid bone loss.

Scientific Exhibit SE76
Treatment Options for Focal Articular Cartilage Lesions of the Knee
Danica Vance, MD, New York, NY
Margaret Wright, MD, New York, NY
Elizabeth Dennis, MD, New York, NY
Julian Sonnenfeld, MD, Aberdeen, NJ
Lauren H. Redier, MD, New York, NY
Charles A. Popkin, MD, Dobbs Ferry, NY
Christopher S. Ahmad, MD, New York, NY
Nicole S. Belkin, MD, Cortlandt Manor, NY
This exhibit provides a detailed discussion regarding diagnosis, indications, and clinical outcomes associated with various surgical technologies for the treatment of focal chondral lesions of the knee.

Scientific Exhibit SE77
Management of Intraoperative Complications During Primary Bone-Patella Tendon-Bone Autograft Anterior Cruciate Ligament Reconstruction
Matthew Gotlin, MD, New York, NY
Ryan Roach, MD, New York, NY
Kristofer E. Chenard, MD, New York, NY
Eric J. Strauss, MD, Scarsdale, NY
Laith M. Jazrawi, MD, New York, NY
This scientific exhibit provides treating orthopaedic surgeons with a comprehensive overview of how to manage common intraoperative complications during primary ACL BTB autograft reconstruction.

Scientific Exhibit SE78
OCD about OCDs: Diagnosis and Management of Osteochondral Dissecans in 2019
Garret Garofolo-Gonzalez, MD, Commack, NY
Ryan Krochak, MD, Philadelphia, PA
Ryan A. Nixon, MD, Brooklyn, NY
Nicholas A. Sgaglione, MD, Great Neck, NY
Orry Erez, MD, Hewlett, NY
This article presents a review and update on this problem, with special emphasis on diagnosis and treatment.

Scientific Exhibit SE79
Preparing Yourself for Hip Arthroscopy Success: Tips and Tricks for Preoperative Planning and Operating Room Management
Michaela J. O’Connor, BA, New York, NY
Manish Mehta, Warren, OH
James Irvine, MD, Pittsburgh, PA
Jamie Confino, BS, Bronx, NY
Thomas S. Lynch, MD, New York, NY
This exhibit utilizes multimedia to present preoperative planning and OR management approaches for hip arthroscopy, emphasizing techniques to facilitate surgery, avoid pitfalls, and optimize outcomes.

Scientific Exhibit SE80
Proximal Humerus Fractures 2019: How to Achieve Success with Fixed Angle Locked Plating for Open Reduction Internal Fixation of 3 and 4 part Proximal Humerus Fractures
Jaclyn M. Jankowski, DO, Jersey City, NJ
Daniel Kaplan, DO, Denver, CO
Richard S. Yoon, MD, Jersey City, NJ
Frank A. Liporace, MD, Englewood Cliffs, NJ
A straightforward step-wise approach to simplifying 3 and 4 part proximal humerus fractures, and tips to avoid common complications such as varus malalignment, impingement, and screw cutout.
Scientific Exhibit SE81
It’s All About the Mortise: Pearls and Pitfalls in Ankle Fracture Care 2019
Sanjit R. Konda, MD, New York, NY
Adam Driesman, MD, New York, NY
Omar A. Behery, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Kenneth A. Egol, MD, New York, NY

By identifying the areas of potential pitfall in all aspects of ankle fracture care, we hope to provide orthopaedic surgeons with strategies to avoid issues in the care of patients with these injuries.

Scientific Exhibit SE82
Seeing is Believing: Arthroscopically Assisted Articular Fracture Surgery
Mary K. Erdman, MD, Los Angeles, CA
Nicholas A. Trasolini, MD, Long Beach, CA
Adam Lindsay, MD, Los Angeles, CA
Stephen Gibbs, MD, Los Angeles, CA
George F. Hatch, MD, Los Angeles, CA
Seth C. Gamradt, MD, Los Angeles, CA
Reza Omid, MD, Irvine, CA
Mark Fleming, DO, Clarksburg, MD
Alexander Weber, MD, Los Angeles, CA

This exhibit showcases the use of arthroscopy in fracture surgery of the upper and lower extremities and describe its advantages, limitations, and technical aspects.

Scientific Exhibit SE83
Avoiding Malrotation in Diaphyseal Fractures of the Femur and Tibia
Mary K. Erdman, MD, Los Angeles, CA
Emily Clarke, BS, Laguna Niguel, CA
Stephen Gibbs, MD, Los Angeles, CA
Mark Howard, MD, Los Angeles, CA
Adam K. Lee, MD, Los Angeles, CA
Geoffrey Marecek, MD, Los Angeles, CA
Brett N. Harwin, BS, Los Angeles, CA

This exhibit reviews the complication of malrotation in fixation of diaphyseal femoral and tibial fractures and provides the viewer with clear strategies for ensuring proper rotational alignment.

Scientific Exhibit SE84
Tips and Tricks for Nailing Metadiaphyseal Fractures: May the Force Be With You, Not Against You
Sanjit R. Konda, MD, New York, NY
Omar A. Behery, MD, New York, NY
Abhishek Ganta, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Nirmal C. Tejwani, MD, New York, NY
Kenneth A. Egol, MD, New York, NY

We present the challenges surrounding metadiaphyseal femoral and tibial fractures and the multitude of tips and tricks to successful reduction and nailing to maximize surgical and clinical outcomes.

Scientific Exhibit SE85
International Orthopaedic Electives: Ethical Considerations and Prioritizing Surgical Capacity Building in Low and Middle-Income Countries
Christian A. Pean, MD, New York, NY
Ajay Premkumar, MD, MPH, New York, NY
Rivka C. Ihejirika, MD, New York, NY
Marc Alain Pean, Port Au Prince, Haiti
Pierre Marie Woolley, MD, Davie, FL
Ronald H. Isaelski, MD, Goshen, NY
Ran Schwarzkopf, MD, New York, NY
Neil P. Sheth, MD, Philadelphia, PA
Kenneth A. Egol, MD, New York, NY

Ethical considerations and challenges of international electives for American orthopaedic surgical residents are reviewed. Partnerships in Haiti and Tanzania with United States programs are highlighted.

Scientific Exhibit SE86
Dealing with Bone Defects in Orthopaedic Trauma: From Past to Present, An Evolving Science
Abraham M. Goch, MD, Bronx, NY
Mani K. Sen, MD, Bronxville, NY
Milan K. Sen, MD, Bronx, NY

This exhibit aims to identify the evolution of the approach to bone defects. Orthopaedic surgeons should understand historical, current, and future strategies for dealing with this complex problem.

Scientific Exhibit SE87
Diagnosis and Management of Surgical Site Infections in Orthopaedic Trauma: Beyond Purulent Drainage
Sanjit R. Konda, MD, New York, NY
Omar A. Behery, MD, New York, NY
Adam Driesman, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Nirmal C. Tejwani, MD, New York, NY
Kenneth A. Egol, MD, New York, NY

We concisely summarize and clarify the controversies and challenges surrounding the treatment of different infections in orthopaedic trauma.

Scientific Exhibit SE88
Beyond Fragility: Geriatric Trauma 2019 is More than Just Osteoporotic Fractures
Ariana Lott, MD, Princeton, NJ
Sanjit R. Konda, MD, New York, NY
Philipp Leucht, MD, New York City, NY
Kenneth A. Egol, MD, New York, NY

This exhibit sheds light on the prevalence of these injuries beyond bone quality and highlights some of the strategies that have been shown to improve outcomes in these patients.

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Exhibit Hall Hours

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- Biologics
- Hip & Knee
- Shoulder & Elbow
- Sports Medicine
- Trauma

Tours will take place Wednesday & Thursday at 8:00 – 9:00 AM. [Register at aaos.org/exhibits.](https://aaos.org/exhibits)

**Ask an Expert** offers you an opportunity to present your case challenges to receive expert diagnosis and recommendations.

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**AAOS Networking Oasis**
Booths 424, 463 and 5427
Reconnect with colleagues and recharge in an AAOS Networking Oasis located in Halls A and D.

**Academy Lounges**
Hall C Lobby, and Exhibit Hall Booths 3900 and 5061
Explore the My Academy app, catch up with a colleague, or keep up with the Annual Meeting Twitter feed in Academy Lounges.

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Booths 332, 3408 and 6841
Wednesday and Thursday 3:30 – 4:00 PM
Friday 10:00 – 11:00 AM

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Enjoy complimentary food and beverage items supplied by many of the exhibitors in their booth. Food service areas located throughout the Exhibit Hall will offer a variety of food and beverage options for purchase.

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- Booth numbers are located on the aisle carpet and aisle numbers are on signs hanging overhead

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AAOS is the sole provider of Continuing Medical Education (CME) credits at the annual meeting between the hours of 7:30 AM to 6:00 PM. CME credit is not provided for presentations in the exhibit hall or time spent viewing the industry exhibits.
The Innovation Theater presentations will inform, educate and inspire attendees by exposing them to the latest innovations in orthopaedic products and services. Live presentations from medical and technology professionals.

Wednesday, March 13

9:45 - 10:05 AM
SMARTdrill presents Osteoscopy: Radiation-Free Continuous Drill Bit Localization
Presented by Smart Medical Devices, Inc.
Presenter: John “Jack” Perry, MD, FAAOS; Michael Karch, MD, FAAOS

Seeing is believing. SMARTdrill’s innovative design communicates the drilling and driving process to a video screen. SMARTdrill converts feel to an LCD screen eliminating depth gauges and drill bit plunge. It displays instantaneous drilling depths, torques, energies, and screw holding strength. Actionable intelligence reducing time, injury, implant waste and radiation.

10:15 - 10:35 AM
Learn Applications and Clinically Proven Benefits of the Zip Surgical Skin Closure
Presented by ZipLine Medical

10:45 - 11:05 AM
CartiMax™ Viable Cartilage Allograft
Presented by MTF Biologics

11:15 - 11:35 AM
Introducing the First Ligament Balancing Robot for TKA - OMNI BalanceBot™
Presented by OMNI
Presenter: Jeffrey Lawrence, MD

OMNIBotics® with NEW BalanceBot™ Predictive Balance Technique is the first system to integrate robotic ligament tensioning into the intra-operative planning process, delivering the optimal combination of TKA alignment and soft tissue balance. The BalanceBot removes uncertainty when assessing ligament tension and gives the surgeon quantitative data to confirm or modify the surgical plan prior to making any femoral resections, potentially reducing the number of soft tissue releases. Combined with the accuracy of robotic-assisted bone resection, the OMNIBotics system provides a completely customized alignment and soft-tissue envelope procedure for TKA.

11:45 AM - 12:05 PM
Pulsatile Irrigators in Outpatient Setting for Acute and Chronic Wound Management
Presented by Stiehl Tech LLC
Presenter: James B Stiehl, MD, MBA

Jet lavage is a standard method for treating surgical wounds and surgical site infections and has typically relied on pulsatile irrigators for pressurized debridement with sterile saline. A system for use in the outpatient clinic is presented that utilizes custom bags to collect the effluent.

1:45 - 2:05 PM
IlluminOss for the Treatment of Fragility Fractures: Patient Customized Polymer Implants Provide Durable Results
Presented by IlluminOss Medical
Presenters: Richard L. McGough, MD; Paul Vegt, MD, PhD; Marc Guijt, MD

IlluminOss provides a new and innovative approach to the treatment of fragility fractures by utilizing a light cured polymer infused into a balloon catheter to create a patient customized implant. In poor quality, compromised bone, this minimally invasive implant provides a much-needed, durable solution for difficult to treat osteoporotic patients.

2:15 - 2:35 PM
Cryoanalgesia: A Path to an Opioid-Free TKA, Pre-op Through Rehab
Presented by Myoscience
Presenter: William Mihalko, MD, PhD

This session will feature discussions including the evolution of cyaanalgesia technologies, application to multimodal pain management protocols and an overview of the results of the recently completed RCT at the Campbell Clinic. The presentation will also include how integrating iovera° has helped orthopedic surgeons enhance clinical outcomes, improve post-surgical recovery and reduce costs.

2:45 - 3:05 PM
OSSIOfiber™ Intelligent Bone Regeneration, A New Bio-Integrative Fixation Material for Orthopedic Implants
Presented by OSSIO
Presenter: Brian Verrier, CEO, OSSIO

OSSIOfiber™ is a first-of-its-kind FDA-approved bio-integrative implant material stronger than cortical bone. Engineered to provide the strength required for secure fixation and allow for full integration into surrounding anatomy without adverse inflammation, OSSIOfiber enables Intelligent Bone Regeneration with nothing permanent left behind.

3:15 - 3:35 PM
Micro C Revolutionizes Medical Imaging
Presented by Micro C Imaging
Presenter: Gregory Kolovich, MD, MPH

Micro C™ is a groundbreaking, patented medical imaging solution for surgeons and physicians treating disorders of the extremities combining a compact, handheld X-ray, digital and infrared camera, image receptor, software and consumables. Designed to deliver increased accuracy, clarity, safety, speed, and integration, it replaces 60-year-old X-ray and fluoroscopy equipment.
Thursday, March 14

**Innovation Theater, Booth 3032, Hall B**

**9:45 - 10:05 AM**
**InSpace™ Balloon - Indications, Techniques and Results**
*Presented by OrthoSpace*
*Presenter: Assaf Dekel, MD*

Orthospace Ltd develops and commercialises simple to implant, biodegradable subacromial InSpace™ Balloon system. Targeting rotator cuff injuries, InSpace™ Balloon aims to reduce pain and increase patients’ range of motion while preserving bone and joint structures.

**10:15 - 10:35 AM**
**ARVIS: Wearable Surgeon-Centric Navigation System**
*Presented by Insight Medical Systems Inc*
*Presenter: David Mayman, MD*

ARVIS is a low-cost wearable navigation system with applications for hip and knee arthroplasty. The system matches the accuracy of other CAS systems while eliminating external equipment in the OR. The integral augmented reality display improves 3D visualization and maintains the surgeon’s focus on the patient rather than external monitors.

**10:45 - 11:05 AM**
**Personalized Joint Preservation - Bodycad Fine Osteotomy System**
*Presented by Bodycad*
*Presenter: Etienne Belzile, MD*

The Fine Osteotomy System uses imaging to produce a 3D model of the patient anatomy. A 3D planning system is used to plan the correction to a healthy alignment for the patient in order to preserve the natural anatomy of the joint. A patient specific guide system is used to cut the bone and position the osteotomy in the exact position for the correction. A personalized plate is used to complete the operation which ensures that no compromise to the planned correction needs to be performed. The result is a correction that replicates the 3D plan that is accurate and reproducible.

**11:15 - 11:35 AM**
**ActivArmor 3D Printed Orthoses - The Next Generation of Casts and Splints**
*Presented by ActivArmor*
*Presenter: Diana Hall; Kevin Kaplan, MD*

ActivArmor - the first commercially available 3D printed casts and splints in the U.S. marketplace presents the next generation of orthoses. Digital casting/splinting service replaces inventory and labor with an in-clinic 3D body image scan and entirely custom designs allowing for individualization and adaptability with advanced healing technologies. Hygienic, waterproof, breathable plastic orthoses allow patients to maintain their quality of life while being immobilized for acute injuries (like breaks and sprains) and chronic conditions like Carpal Tunnel Syndrome. Affordable and covered by insurance, and worn by professional athletes, ActivArmor devices are a strong competitive advantage and available to providing clinics across the country.

**1:45 - 2:05 PM**
**All-in-One Block and Modular Disposable Trial in U2 Knee™ System**
*Presented by United Orthopedic Corporation*
*Presenters: Mark Froimson, MD, MBA; Stefan Kreuzer, MD; Chad Martin*

Mark Froimson, MD and Stefan Kreuzer, MD, demonstrate the enhanced efficiency of the United Orthopedic Corporation ("UOC") U2 TKA 1.5 tray instrumentation system. The patented AIO™ ("All-in-One Block") and MDT™ ("Modular Disposable Trial") are designed to increase operating room case capacity while achieving internal cost savings, all without sacrificing patient outcomes or overall quality.

**2:15 - 2:35 PM**
**SuperPATH: New Clinical Data for the Superior Approach to Total Hip Arthroplasty**
*Presented by MicroPort Orthopedics*
*Presenter: Jimmy Chow, MD*

Learn about MicroPort’s SuperPATH® approach. A soft-tissue sparing technique that is built on 15 years of clinical success and has recently been shown to reduce several important hospital metrics including length of stay, complication rates, and readmission rates, while increasing the rate at which patients are discharged home following surgery.

**2:45 - 3:05 PM**
**The Science of Stem Length in Shoulder Arthroplasty**
*Presented by Stryker*
*Presenter: Joaquin Sanchez-Sotelo, MD, PhD*

Dr. Joaquin Sanchez-Sotelo, MD, Ph.D. will present topics related to optimal stem length selection. This session will highlight the recent trend of shorter stems in shoulder arthroplasty, the risks presented by stems that are too short or lead to adverse bone reaction such as stress-shielding, and an overview of a study used to determine the ideal length humeral stem.

**3:15 - 3:35 PM**
**Treating Shoulder Arthritis in the Young & Active Person with the OVOMotion Stemless Total Shoulder System**
*Presented by Arthrosurface, Inc.*
*Presenter: Gregory Nicholson, MD*

Gregory Nicholson, MD will discuss treating shoulder osteoarthritis using the Stemless OVOMotion and Inlay Glenoid Total Shoulder System. The combination of a non-spherical humeral head and inlay glenoid achieved ~20-30% better range of motion compared to traditional stemmed/stemless designs. Further clinical insights, experience, and surgical technique will also be presented.
Friday, March 15

9:45 - 10:05 AM
Galileo Lag Screw - Eliminating Lateral Protrusion
Presented by Advanced Orthopaedic Solutions

10:15 - 10:35 AM
SMR TT Hybrid Glenoid - The First Convertible Hybrid Glenoid on the Market
Presented by LimaCorporate
Presenter: LimaCorporate Staff
SMR TT Hybrid Glenoid combines the best of both Cemented Glenoid and Metal Back Glenoid philosophies for Anatomic Shoulder Replacement. It has the same poly thickness of the cemented glenoid and the convertibility of the Metal Back, with no need to remove the implanted Trabecular-Titanium central peg, if well fixed.

10:45 - 11:05 AM
Hintermann Series H2® – The Latest Innovation in Total Ankle Replacement Systems
Presented by DT MedTech, A Data Trace Company
Presenter: Prof. Beat Hintermann
The Hintermann Series H2 TAR is designed to provide high intrinsic stability, low contact stresses to the bone, low ligament stress, and minimal wear. The H2's innovative design allows for adjustable inlay orientation to further support the surrounding tissues, aiming to provide stability against rotational forces of the tibial component.

11:15 - 11:35 AM
CurveBeam LineUP: Bilateral, Weight Bearing CT Imaging for the Knees & Feet Plus Hand & Elbow
Presented by CurveBeam
Presenter: Cesar de Cesar Netto, MD, PhD
CurveBeam’s LineUP system combines the convenience of diagnostic X-Ray imaging, the power of three-dimensional computed tomography. The LineUP is the only system that allows for bilateral, weight bearing imaging in a natural standing position. Weight bearing CT imaging allows specialists to assess biomechanical spatial relationships and alignment.

11:45 AM - 12:05 PM
Explore the Future: Is a Fluoro-Free Customized Hip Arthroplasty Possible?
Presented by Conformis
Presenter: Robert Tait, MD
The CONFORMIS Hip System utilizes 3D imaging technology to provide pre-surgical navigation of the best fit implants for restoration of patient anatomy. The hip stem is optimized with a customized neck, and jigs to guide insertion of all components for proper orientation. Maximize procedural efficiency and streamline the overall surgery.

1:45 PM - 2:05 PM
Optimized Positioning System (OPS™) for Total Hip Arthroplasty
Presented by Corin Group
Presenter: Andrew Shimmin
Corin’s OPS™ technology consists of preoperative planning software coupled with intraoperative delivery solutions designed to optimize implant alignment in total hip arthroplasty. The software considers each patient’s unique hip-spine relationship as well as their 3D anatomy and joint mechanics.

2:15 PM - 2:35 PM
The Mobil-Aider: An Innovative Device to Assess Joint Mobility
Presented by Therapeutic Articulations, LLC
Presenter: Dawn T. Gulick, MD
The Mobil-Aider is an innovative device to QUANTIFY joint mobility. Assessing knee translation for possible ACL injuries can now address 3 major concerns: positioning, clinician hand-size mismatch, and quantification. This simple, hand-held, 13-ounce device is versatile and cost-effective. It will pay for itself in 2 months……Info: www.iortho.xyz
Have a challenging case?  
Seeking Advice? Ask an Expert!

Ask an Expert Schedule – Hall C, Booth 4300

Take this opportunity to present a challenging case to an expert. Bring your HIPAA compliant case on a flash drive (10 minutes prior to the session start time) and present it for diagnosis and recommendation.

We encourage audience participation to complement the exchange of ideas.

### Wednesday, March 13
- **9:30 AM - 10:15 AM**  
  **Pediatrics**  
  Michael B. Millis, MD  
  Stuart L. Weinstein, MD

- **10:30 AM - 11:15 AM**  
  **Hip & Knee**  
  Daniel J. Berry, MD  
  Kelly Vince, MD

- **2:00 PM - 2:45 PM**  
  **Shoulder**  
  Evan L. Flatow, MD  
  William H. Seitz Jr., MD

- **3:00 PM - 3:45 PM**  
  **Spine**  
  Paul Anderson, MD  
  Michael J. Yaszemski, MD, PhD

- **4:00 PM - 4:45 PM**  
  **Hip Arthroscopy and Hip Joint Preservation**  
  John C. Clohisy, MD  
  Rafael J. Sierra, MD

### Thursday, March 14
- **9:30 AM - 10:15 AM**  
  **Hand**  
  David C. Ring, MD  
  Melvin Paul Rosenwasser, MD

- **10:30 AM - 11:15 AM**  
  **Foot and Ankle**  
  Judith F. Baumhauer, MD  
  Steven M. Raikin, MD

- **2:00 PM - 2:45 PM**  
  **Sports Medicine**  
  James R. Andrews, MD  
  Mark S. Schickendantz, MD

- **3:00 PM - 3:45 PM**  
  **Trauma**  
  Kenneth J. Koval, MD  
  Paul Tornetta III, MD

- **4:00 PM - 4:45 PM**  
  **Hip & Knee**  
  Allan E. Gross, MD, MD, FRCSC, Prof  
  Jose A. Rodriguez, MD

### Friday, March 15
- **9:30 AM - 10:15 AM**  
  **Periprosthetic Joint Infection**  
  Bassam Masri, MD, FRCS  
  Javad Parvizi, MD, FRCS

- **10:30 AM - 11:15 AM**  
  **Hip & Knee**  
  Fares S. Haddad, MD, FRCS  
  Adolph V. Lombardi Jr., MD

- **2:00 PM - 2:45 PM**  
  **Shoulder**  
  Jon J.P. Warner, MD  
  Joseph D. Zuckerman, MD
Learn new ways to streamline your practice and enhance your image.

Technology Theater – Hall A, Booth 771

The Technology Theater is included in your registration and provides the opportunity to experience the latest technology and applications beneficial for orthopaedic surgeons. Learn how to introduce new technology into your practice, optimize your practice website, and the newest Killer Apps. Five new sessions this year!

Wednesday, March 13

9:30 AM - 10:15 AM
Defending Your Internet Reputation
David L. Nelson, MD

Physician review sites are now permanent parts of the medical landscape. Each practice must develop a strategy that embraces and incorporates them.

10:30 AM - 11:15 AM
Optimizing Your Practice Website and Online Marketing: Tips and Tricks
Orrin Franko, MD

We will review 5-10 specific website enhancements that can be easily integrated and implemented to increase online traffic and referrals. Target audience: moderate to advanced tech knowledge is helpful.

2:00 PM - 2:45 PM
Making and Using 3D Models for Complex Hip Arthroplasty and Hip Preservation
Brian M. Haus, MD
Gavin C. Pereira, MD, FRCS

The process and use of DIY and commercially made 3D bone models in hip preservation and arthroplasty.

3:00 PM - 3:45 PM
Killer Apps - 2019!
Ira H. Kirschenbaum, MD

Killer Apps are the ones you just can't do without once you start using them. The 2019 edition of this presentation includes the latest apps!

4:00 PM - 4:45PM
Getting Started With Patient-Reported Outcome Collection Without Breaking the Bank
John P. Andrawis, MD, MBA
Andrea Leyton-Mange, BA

Learn about various methods for collecting Patient-Reported Outcomes (PROs) and find out which options are best for your budget, your practice setting, and your priorities.
Thursday, March 14

9:30 AM -10:15 AM
Revolutionize Your Life With Automation: Enhancing Outcomes, Education, and Revenue
Orrin Franko, MD

This session will demonstrate how automation can eliminate errors and overhead expense while increasing billing, patient engagement, and revenue.

10:30 AM - 11:15 AM
Leveraging Orthopaedic Marketing: How Do We Optimize Impact
Jessica Morton, MD

Review of current trends in Orthopaedic advertising and strategies for how to optimize your marketing presence at the individual, institutional, and national level.

2:00 PM - 2:45 PM
Orthopaedics and Technology: Newer Is Not Always Better
Thomas C. Barber, MD
Kevin J. Bozic, MD, MBA
Ronald B. Wyatt, MD

Introducing new technologies into an orthopaedic practice can be of benefit to providers and patients, but can also present operational, regulatory, and ethical challenges.

3:00 PM - 3:45 PM
Patient Safety for Orthopaedic Surgeons
David L. Nelson, MD

A scientific human factors analysis of the military, aviation, and nuclear industries has provided great insights into preventing errors in surgery.

4:00 PM - 4:45PM
How to Grow Orthopaedic Patient Volume in the Digital World
Daniel Goldberg, MD

A discussion of how your orthopaedic practice can compete in an increasingly digital world and what strategies your practice must implement to grow patient volume.

Friday, March 15

9:30 AM -10:15 AM
Computer Assisted Navigation in Spine Surgery
A. Herbert Alexander, MD
David B. Verst, MD

Spinal deformity and instability requiring instrumented pedicle fixation is challenging because of the narrow envelope of safety for pedicle screw insertion. Computerized surgical navigation theoretically can raise the level of safety by precisely directing the trajectory and depth of the pedicle drill hole. This is a discussion of two different methods: robotic positioning of the drill guide for pedicle screw insertion versus portable CT scan interlinked with visual surgical navigation for pedicle screw insertion.

10:30 AM - 11:15 AM
Making Surgical Videos for PowerPoint – Step-by-Step Live Demonstration
Randy R. Bindra, MD, FRACS, FRCS

This session will feature a live demonstration of the process of video capture using a cell phone, editing clips on a PC and then compressing to a compatible high definition video for insertion into PowerPoint.

2:00 PM - 2:45 PM
Machine Learning and Data Driven Orthopaedics
Christian Veillette, MD

Learn about the role of machine learning, risk stratification and clinical decision support tools for prediction of orthopaedic outcomes and data driven orthopaedics.
**Industry Lunch and Learn Sessions**

Exhibitors have secured space at the Venetian/Sands Expo to conduct non-CME Industry Lunch and Learn Sessions during the AAOS 2019 Annual Meeting. Advance registration for these sessions was handled solely by participating exhibitors. The Academy is not responsible for the content, faculty, or registration of attendees for these events and does not accredit these events for CME.

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**Wednesday, March 13  12:40 – 1:25 PM**

**Treatment of Subchondral Bone Defects featuring The Subchondroplasty® Procedure**  
Lunch and Learn Presented by Zimmer Biomet  
Room 3101

**Pain Management Options for Total Joint Reconstructions**  
Lunch and Learn Presented by Recro Pharma, Inc  
Room 3103  
Presenters: Richard Iorio, MD; Alexander Sah, MD  
Objectives for this meeting are to understand the specific needs of inpatient and outpatient total joint reconstructions related to pain management, the utilization of multi-modal strategies to achieve high patient satisfaction and the needs for the future as more patients are moved to outpatient surgeries.

**Closing the Gap on Patient Satisfaction: Bi Cruciate Retaining Knees with Hand Held Robotic Technology**  
Lunch and Learn Presented by Smith & Nephew, Inc.  
Ask an Expert, Booth 4300, Exhibit Hall C

**Persona Primary Knee featuring Trabecular Metal Tibia and Medial Congruent Bearing**  
Presented by Zimmer Biomet  
Technology Theater, Booth 771, Exhibit Hall A

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**Thursday, March 14  12:40 – 1:25 PM**

**Contemporary Topics in Revision Arthroplasty**  
Presented by Smith & Nephew, Inc.  
Ask an Expert, Booth 4300, Exhibit Hall C

**The DePuy Synthes Femoral Neck System (FNS): An Innovative Device to Repair Femoral Neck Fractures**  
Presented by DePuy Synthes companies of Johnson & Johnson  
Technology Theater, Booth 771, Exhibit Hall A  
Presenters: Christopher Finkemeier, MD; Professor Karl Stoffel  
Through case presentations and a discussion, Dr. Finkemeier and Professor Stoffel will present on the design rationale and their clinical results with the DePuy Synthes Femoral Neck System (FNS).

Presented by DePuy Synthes companies of Johnson & Johnson  
Room 3103  
Presenters: Daniel Hoeffel, MD; Jacob Hutchins, MD; Alexander Sah, MD; James Van Home, MD; Diane Doucette, MBA, RN  
Join our esteemed panel of experts as they discuss transitioning total joint arthroplasties from an inpatient setting to the ambulatory surgery center, and how long-acting pain management strategies enable this transition. Presenters will discuss administrative, clinical and practical considerations, whether starting the transition or honing current practices.

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**Friday, March 15  12:40 – 1:25 PM**

**Managing Outcomes in Outpatient Total Hip Arthroplasty**  
Presented by Smith & Nephew, Inc.  
Ask an Expert, Booth 4300, Exhibit Hall C

**Cutting Edge Technologies and Surgical Techniques in 2019 for Managing Massive and Irreparable Rotator Cuff Tear**  
Presented by DePuy Synthes companies of Johnson & Johnson  
Technology Theater, Booth 771, Exhibit Hall A  
Presenters: Richard Ryu, MD; Paul Favorito, MD; Mark Getelman, MD  
Case-based interactive audience participation focusing on innovation and state-of-the-art surgery.
Bioskills Sessions

The Academy has provided exhibitors with space at the Venetian/Sands Expo in Hall G (level 1) to conduct non-CME Bioskills Sessions during the AAOS 2019 Annual Meeting. Advance registration for these sessions is handled solely by the exhibitors that have secured Bioskills Sessions space. The Academy is not responsible for the content, faculty, of registration or attendees for these exhibitor Bioskills Sessions events and does not accredit these events for CME.

Wednesday, March 13

12:30 – 2:30 PM
Opioid Sparing Reverse Shoulder Arthroplasty (by invitation only)
Presented by DePuy Synthes
Presenters: David Weinstein, MD; Aaron Chamberlain, MD
This interactive session will feature both didactic and hands-on cadaveric training with the DePuy Synthes Reverse Shoulder Arthroplasty solutions.

12:30 – 2:30 PM
The Game Changer in Surgical Skill Training Lifelike Fractures in Trauma Education (by invitation only)
Presented by RIMASYS GmbH

Thursday, March 14

12:30 – 2:30 PM
Treatment of Subchondral Bone Defects featuring The Subchondroplasty® Procedure (by invitation only)
Presented by Zimmer Biomet
Presenters: Amon T. Ferry, MD; Scott A. Sigman, MD

12:30 – 2:30 PM
Innovative, Bone Conserving Humeral and Glenoid Solutions Featuring Sidus® Stem Free Shoulder and Comprehensive® Augmented Baseplate (by invitation only)
Presented by Zimmer Biomet

12:30 – 2:30 PM
Sports Medicine Innovations for Complex Rotator Cuff Cases: Scaffolds and Advanced Tensioning Anchors (by invitation only)
Presented by Zimmer Biomet
Presenters: Joseph A. Abboud, MD; Nicholas A. Sagglione, MD

Friday, March 15

12:30 – 2:30 PM
Management of Proximal Humeral Fractures: Plate, Nail, Hemi or Reverse? (by invitation only)
Presented by DePuy Synthes
Presenters: Richard Ryu, MD; Paul Favorito, MD
This interactive symposium has been designed for surgeons who are interested in the treatment of proximal humerus fractures. The agenda will consist of a brief introduction on humeral fractures served with lunch, followed by faculty led cadaveric training on different treatment methodologies.

Industry Evening Events

The list of exhibitor sponsored educational events has been made available by the American Academy of Orthopaedic Surgeons as a service to our attendees and is for information only. The Academy is not responsible for the content or faculty of these exhibitor sponsored educational events and does not accredit these events for CME or any other purpose.

Tuesday, March 12

6:00 – 9:00 PM
Residents Evening of Education
Presented by Zimmer Biomet
The Chelsea at the Cosmopolitan

7:00 – 9:30 PM
Functional THA Planning and Control with EOS 3D Solutions (by invitation only)
Presented by EOS Imaging
The Venetian, Room 701
Presenters: Peter K. Sculco, MD; Prof. Jean Yves Lazennec
Utilization of Pre-Operative Sitting and Standing Images: Using EOS to Determine Intraoperative Target Component Position and Implant Choice. Post-Operative EOS Evaluation: The Importance of Incidence Angle and Reflection About THP Kinematic Alignment. Register for this event by email at jsas@eos-imaging.com

Thursday, March 14

6:00 – 7:30 AM
Beyond ERAS Breakfast Symposium
Presented by Mallinckrodt Pharmaceuticals
The Venetian, Palazzo Room O
Presenter: Dr. Shah
Join your colleagues as we discuss the prevalence of post-operative pain and current strategies for pain management, the potential benefits of opioid-free ERAS protocols and learnings from early adopters of opioid-free ERAS.

6:00 – 8:30 pm
Directions of Injections: Update on Knee Injection Therapy
Jointly presented by Global Education Group and MedicusWorks, LLC, and is supported by an educational grant from Flexion Therapeutics, Inc.
The Venetian, Palazzo Ballroom N
Presenters: Giles R. Scuderi, MD, FACS; Fred D. Cushner, MD; Nirav H. Amin, MD; Michael A. Kelly, MD; Gwo-Chin Lee, MD; Kevin D. Plancher, MD, MPH, MS, FACS, FAOAS
An evidence-based review of clinical trials supporting state-of-the-science management models for OA of the knee, AAOS guidelines for intra-articular injectable therapies, and barriers facing HCPs relative to these therapies. Via case-based education, this CME program will show HCPs how they may incorporate AAOS guidelines into patient care.

6:00 – 8:00 pm
Utilizing App-Controlled Neuromuscular Electrical Stimulation for Total Knee Arthroplasty and Knee Osteoarthritis (by invitation only)
Presented by CyMedica Orthopedics
The Venetian, Room 3805
Presenter: Carlos Higuera, MD
Register for this event by email at erin.h@cymedicaortho.com.

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Thank You!

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<td>3D Systems</td>
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<td>Littleton, CO</td>
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<td>Phone: 720-643-1001</td>
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<td><a href="http://www.3dsystems.com">www.3dsystems.com</a></td>
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<td>A&amp;E Endoscopy</td>
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<td>Miami, FL</td>
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<td>Phone: 305-591-4043</td>
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<td><a href="http://www.aependoscopy.com">www.aependoscopy.com</a></td>
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<td>AA Medical Store</td>
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<td>Mokena, IL</td>
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<td>Phone: 954-789-0607</td>
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<td><a href="http://www.aamedicalstore.com">www.aamedicalstore.com</a></td>
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<td>AAAHC</td>
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<td>Phone: 847-853-6060</td>
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<td><a href="http://www.aahc.org">www.aahc.org</a></td>
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<td>AADCO Medical, Inc.</td>
<td>6849</td>
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<td>Randolph, VT</td>
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<td>Phone: 800-225-9014</td>
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<td><a href="http://www.aadcomed.com">www.aadcomed.com</a></td>
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<td>AAHHS-HFAP</td>
<td>5725</td>
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<td>Chicago, IL</td>
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<td>Phone: 312-920-7383</td>
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<td><a href="http://www.hfap.org">www.hfap.org</a></td>
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<td>AAOS Ask an Expert Presentation</td>
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<td>AAOS Beverage Breaks</td>
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EXHIBITS

Anatomical Models

3D Systems 4046
Artisan Medical Displays, LLC 1773
Bodycad 5256
Industrias Medicas Sampedro S.A.S. 4255
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Business to Business/OEM

3D Systems 4046
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© 2019 American Academy of Orthopaedic Surgeons
Meetings & New Members

AAOS proudly welcomed more than 1,000 new members in 2018.
All events take place at the Venetian/Sands Expo.

### 2019 Meeting in Review

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
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</thead>
<tbody>
<tr>
<td>Breakfast Meeting</td>
<td>Saturday, March 16</td>
<td>6:15 - 7:30 AM</td>
<td>Room 903</td>
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<tr>
<td><strong>AJRR</strong></td>
<td></td>
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<tr>
<td>User Group Network Meeting</td>
<td>Wednesday, March 13</td>
<td>11:00 AM - 2:00 PM</td>
<td>Room 907</td>
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<tr>
<td><strong>Board of Councilors (BOC)</strong></td>
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<tr>
<td>Executive Committee Meeting</td>
<td>Wednesday, March 13</td>
<td>1:00 - 2:30 PM</td>
<td>Room 1001</td>
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<tr>
<td>Orientation</td>
<td>Wednesday, March 13</td>
<td>2:30 - 4:00 PM</td>
<td>Room 1001</td>
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<tr>
<td>Advocacy Resources Committee Meeting</td>
<td>Thursday, March 14</td>
<td>1:00 - 2:00 PM</td>
<td>Room 907</td>
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<tr>
<td>Research and Quality Committee Meeting</td>
<td>Thursday, March 14</td>
<td>1:00 - 2:00 PM</td>
<td>Room 1003</td>
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<tr>
<td>Economic Issues Committee Meeting</td>
<td>Thursday, March 14</td>
<td>2:00 - 4:00 PM</td>
<td>Room 907</td>
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<tr>
<td>State Legislative and Regulatory Issues Committee Meeting</td>
<td>Thursday, March 14</td>
<td>4:00 - 6:00 PM</td>
<td>Room 1003</td>
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<tr>
<td>Business Meeting</td>
<td>Friday, March 15</td>
<td>8:00 - 11:00 AM</td>
<td>Palazzo M</td>
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<tr>
<td><strong>Board of Specialty Societies (BOS)</strong></td>
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<tr>
<td>Fellowship Committee Meeting</td>
<td>Thursday, March 14</td>
<td>6:30 - 8:00 AM</td>
<td>Room 903</td>
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<tr>
<td>Business Meeting</td>
<td>Friday, March 15</td>
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### Combined Meeting of the Annual Meeting Committees

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<td>Breakfast Meeting</td>
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<td>6:30 - 7:30 AM</td>
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### Communications Cabinet

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<tr>
<td>Meeting</td>
<td>Thursday, March 14</td>
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### Diversity Advisory Board

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<tr>
<td>Committee Meeting</td>
<td>Friday, March 15</td>
<td>2:00 - 4:00 PM</td>
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### Education Assessments and Examinations

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<tr>
<td>Committee Business Meeting</td>
<td>Thursday, March 14</td>
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### Emerging Professionals

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### Exhibits

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<td>Exhibitors Advisory Council</td>
<td>Friday, March 15</td>
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### Fellowship Directors’ Forum

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### Health Care Systems Committee (HCSC)

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### JAAOS Deputy Editor

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### Leadership Fellows Program

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<td>Graduation/Orientation</td>
<td>Friday, March 15</td>
<td>6:30 - 8:30 AM</td>
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<tr>
<td>Reception</td>
<td>Friday, March 15</td>
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### Membership and Leader Development

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<td>2:00 - 4:00 PM</td>
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All events take place at the Venetian/Sands Expo.

### OrthoInfo

**Editorial Board Meeting**
- Wednesday, March 13
- 12:30 - 2:30 PM
- Room 903

### Resident Assembly

**Open Forum**
- Wednesday, March 13
- 10:00 - 11:00 AM
- Room 904

**Executive Committee Meeting**
- Wednesday, March 13
- 6:30 - 8:30 PM
- Room 901

**Education Committee Meeting**
- Friday, March 15
- 7:30 - 9:00 AM
- Room 1003

**Career Development Committee Meeting**
- Friday, March 15
- 8:30 - 10:00 AM
- Room 907

### Resident Education

**Forum**
- Friday, March 15
- 10:00 - 11:00 AM
- Room 904

### Health Policy Committee Meeting
- Friday, March 15
- 8:30 - 10:00 AM
- Room 1001

### Research Committee Meeting
- Friday, March 15
- 8:30 - 10:00 AM
- Room 902

### Technology Committee Meeting
- Friday, March 15
- 8:30 - 10:00 AM
- Room 906
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<td>Wednesday, March 13</td>
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<tr>
<td>Women in Arthroplasty</td>
<td>Wednesday, March 13</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Wednesday, March 13</td>
<td>Room 801-802</td>
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<tr>
<td>International Committee Meeting</td>
<td>Thursday, March 14</td>
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<tr>
<td>International Reception</td>
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<td>Committee Meetings</td>
<td>Friday, March 15</td>
<td>Room 801</td>
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<td>Residents Luncheon</td>
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<tr>
<td><strong>American Association of Latino Orthopaedic Surgeons</strong></td>
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<td>Luncheon</td>
<td>Friday, March 15</td>
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<td><strong>American Orthopaedic Association (AOA)</strong></td>
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<td>Officer's Meeting</td>
<td>Tuesday, March 12</td>
<td>Room 3805</td>
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<td>Leadership/Fellowships Committee Meeting</td>
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<tr>
<td>Critical Issues/Educational Programming Committee Meeting</td>
<td>Wednesday, March 13</td>
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<tr>
<td>Nominating Committee Meeting</td>
<td>Wednesday, March 13</td>
<td>Room 4803</td>
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<tr>
<td>Finance/Investment Committee Meeting</td>
<td>Wednesday, March 13</td>
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<td>Development/Donor Support Committee Meeting</td>
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<td>Own the Bone Steering Committee Meeting</td>
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<td>CORD/Academics Committee Meeting</td>
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<td>Membership Committee Meeting</td>
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<td>AOA/ABOS/RRC Meeting</td>
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<td>CORD Conference</td>
<td>Friday, March 15</td>
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<td>OMeGA Board/RC Meeting</td>
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<td>Friday, March 15</td>
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<tr>
<td>OMeGA Specialty Society Meeting</td>
<td>Friday, March 15</td>
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<tr>
<td><strong>American Orthopaedic Society for Sports Medicine</strong></td>
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<td>AANA/AOSSM Fellowship Match Committee</td>
<td>Thursday, March 14</td>
<td>Room 2804</td>
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<td>AOSSM Fellowship Committee</td>
<td>Thursday, March 14</td>
<td>Room 4803</td>
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<tr>
<td>Council of Delegates</td>
<td>Thursday, March 14</td>
<td>Room 2303</td>
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<td>Accreditation Task Force</td>
<td>Thursday, March 14</td>
<td>Room 4803</td>
</tr>
</tbody>
</table>
# AFFILIATE & ALUMNI MEETINGS

All events take place at the Venetian/Sands Expo unless noted otherwise.

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Enduring Education Committee</strong></td>
<td>Friday, March 15 8:00 - 9:30 AM</td>
<td>Room 4803</td>
</tr>
<tr>
<td><strong>Nominating Committee</strong></td>
<td>Friday, March 15 10:30 AM - 12:00 PM</td>
<td>Room 4802</td>
</tr>
<tr>
<td><strong>Surgical Skills SubCommittee</strong></td>
<td>Friday, March 15 10:30 AM - 12:00 PM</td>
<td>Room 4802</td>
</tr>
<tr>
<td><strong>Hall of Fame Committee</strong></td>
<td>Friday, March 15 12:00 - 1:00 PM</td>
<td>Room 4803</td>
</tr>
<tr>
<td><strong>OJSM Editorial Board</strong></td>
<td>Friday, March 15 12:00 - 1:30 PM</td>
<td>Room 1004</td>
</tr>
<tr>
<td><strong>Research Committee</strong></td>
<td>Friday, March 15 12:00 - 2:00 PM</td>
<td>Room 1002</td>
</tr>
<tr>
<td><strong>Fellowship Program Directors and Coordinators</strong></td>
<td>Friday, March 15 1:00 - 2:30 PM</td>
<td>Room 1001</td>
</tr>
<tr>
<td><strong>AJSM Electronic Media Editorial Board Meeting</strong></td>
<td>Friday, March 15 2:00 - 3:00 PM</td>
<td>Room 4803</td>
</tr>
<tr>
<td><strong>Education Committee</strong></td>
<td>Friday, March 15 4:00 - 5:30 PM</td>
<td>Room 1004</td>
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</table>

### American Shoulder and Elbow Surgeons (ASES)

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
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<tbody>
<tr>
<td><strong>Foundation Board of Trustees Meeting</strong></td>
<td>Thursday, March 14 10:30 AM - 12:00 PM</td>
<td>Room 807</td>
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<tr>
<td><strong>JSES Board of Trustees Meeting</strong></td>
<td>Friday, March 15 9:30 AM - 12:00 PM</td>
<td>Room 507</td>
</tr>
<tr>
<td><strong>Executive Committee Meeting</strong></td>
<td>Friday, March 15 12:30 - 5:30 PM</td>
<td>Room 507</td>
</tr>
<tr>
<td><strong>Program Planning Committee</strong></td>
<td>Friday, March 15 1:30 - 2:30 PM</td>
<td>Room 503</td>
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</table>

### American Sports Medicine Fellowship Society

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>Alumni Reception</strong></td>
<td>Friday, March 15 6:00 - 10:00 PM</td>
<td>Caesars Palace, Verona</td>
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</table>

### Association of Bone and Joint Surgeons

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
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<tbody>
<tr>
<td><strong>CORR Advisory Board Meeting</strong></td>
<td>Wednesday, March 13 7:00 - 8:00 AM</td>
<td>Room 705</td>
</tr>
<tr>
<td><strong>CORR Publishers Committee Meeting</strong></td>
<td>Wednesday, March 13 8:30 - 10:30 AM</td>
<td>Room 704</td>
</tr>
<tr>
<td><strong>CORR Board of Trustees Meeting</strong></td>
<td>Wednesday, March 13 12:00 - 2:45 PM</td>
<td>Room 704</td>
</tr>
<tr>
<td><strong>ABJS Executive Committee Meeting</strong></td>
<td>Thursday, March 14 12:30 - 4:00 PM</td>
<td>Room 3805</td>
</tr>
<tr>
<td><strong>CORR Reception</strong></td>
<td>Friday, March 15 7:00 - 10:00 PM</td>
<td>Wynn, Lefleur 1</td>
</tr>
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</table>

### Association of Residency Coordinators in Orthopaedic Surgery (ARCOS)

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>New Coordinator Session</strong></td>
<td>Tuesday, March 12 1:00 - 3:00 PM</td>
<td>Tropicana, Montecristo 1</td>
</tr>
<tr>
<td><strong>Welcome Reception</strong></td>
<td>Tuesday, March 12 6:00 - 8:00 PM</td>
<td>Hard Rock Cafe, 3771 S Las Vegas Blvd</td>
</tr>
<tr>
<td><strong>Business Meeting</strong></td>
<td>Wednesday, March 13 7:00 AM - 5:00 PM</td>
<td>Tropicana, Cohiba 9</td>
</tr>
<tr>
<td><strong>Business Meeting</strong></td>
<td>Thursday, March 14 7:00 - 8:00 AM</td>
<td>Tropicana, Cohiba 9</td>
</tr>
<tr>
<td><strong>Business Meeting</strong></td>
<td>Friday, March 15 7:00 - 5:00 PM</td>
<td>Tropicana, Cohiba 9</td>
</tr>
</tbody>
</table>

### Association of VA Orthopaedic Surgeons (AVAOS)

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Meeting</strong></td>
<td>Thursday, March 14 8:00 AM - 12:00 PM</td>
<td>Room 701</td>
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</table>

### Balboa Navy Orthopaedic

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date/Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td><strong>Alumni Reception</strong></td>
<td>Friday, March 15 6:30 - 9:00 PM</td>
<td>Tropicana, Ashton 1</td>
</tr>
<tr>
<td>Event</td>
<td>Date/Time</td>
<td>Location</td>
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</tr>
<tr>
<td>Beaumont Health Alumni Reception</td>
<td>Friday, March 15, 6:00 - 8:00 PM</td>
<td>Wynn, SW Veranda</td>
</tr>
<tr>
<td>Boston University Orthopaedic Surgical Associates, Inc. Alumni Reception</td>
<td>Thursday, March 14, 6:00 - 8:00 PM</td>
<td>Room 702</td>
</tr>
<tr>
<td>Girdlestone Orthopaedic Society Reception</td>
<td>Wednesday, March 13, 6:00 - 8:00 PM</td>
<td>Caesars Palace, Anzio</td>
</tr>
<tr>
<td>Harvard Combined Orthopaedic Residency Program Alumni Reception</td>
<td>Friday, March 15, 6:00 - 9:00 PM</td>
<td>Sugarcane Raw Bar Grill, 3355 S Las Vegas Blvd</td>
</tr>
<tr>
<td>Henry Ford Health System Alumni Reception</td>
<td>Friday, March 15, 6:00 - 9:00 PM</td>
<td>Carmine's The Forum Shops at Caesars, 3500 S Las Vegas Blvd</td>
</tr>
<tr>
<td>Herodicus Society Executive Board Meeting</td>
<td>Friday, March 15, 6:00 - 8:00 PM</td>
<td>Room 802</td>
</tr>
<tr>
<td>Hospital for Special Surgery Class Representative &amp; International Ambassador Meeting</td>
<td>Friday, March 15, 4:30 - 6:00 PM</td>
<td>Wynn, La Tache 2</td>
</tr>
<tr>
<td>Howard University Alumni Association Reception and Program Benefits Dinner</td>
<td>Friday, March 15, 6:00 - 9:00 PM</td>
<td>The Cosmopolitan</td>
</tr>
</tbody>
</table>

All events take place at the Venetian/Sands Expo unless noted otherwise.

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The final event is the Alumni Association Reception and Program Benefits Dinner by Howard University, scheduled for Friday, March 15, 6:00 - 9:00 PM at The Cosmopolitan.
All events take place at the Venetian/Sands Expo unless noted otherwise.

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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</thead>
<tbody>
<tr>
<td><strong>International Geriatric Fracture Society (IGFS)</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Breakfast Meeting</td>
<td>Friday, March 15</td>
<td>6:45 - 8:00 AM</td>
<td>Caesars Palace, Anzio</td>
</tr>
<tr>
<td><strong>International Society for Technology in Arthroplasty (ISTA)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Directors Meeting</td>
<td>Wednesday, March 13</td>
<td>2:00 - 5:00 PM</td>
<td>Room 3805</td>
</tr>
<tr>
<td><strong>International Society of Arthroplasty Registries (ISAR)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Update</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Room 504</td>
</tr>
<tr>
<td><strong>International Society of Orthopaedic Centers, Ltd. (ISOC)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Board of Directors Business Meeting</td>
<td>Thursday, March 14</td>
<td>7:00 AM - 5:00 PM</td>
<td>Room 2201 A</td>
</tr>
<tr>
<td><strong>International Society of Orthopaedic Surgery and Traumatology (SICOT)</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Foundation Board of Directors Meeting</td>
<td>Friday, March 15</td>
<td>8:00 - 10:00 AM</td>
<td>Room 3805-3806</td>
</tr>
<tr>
<td>National Committee Board Meeting</td>
<td>Friday, March 15</td>
<td>10:00 AM - 12:00 PM</td>
<td>Room 3805-3806</td>
</tr>
<tr>
<td><strong>J. Robert Gladden Orthopaedic Society (JRGOS)</strong></td>
<td></td>
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<tr>
<td>Luncheon</td>
<td>Thursday, March 14</td>
<td>12:45 - 2:30 PM</td>
<td>Tropicana, Cohiba 104</td>
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<tr>
<td>Trilogy Breakfast</td>
<td>Friday, March 15</td>
<td>7:00 - 9:00 AM</td>
<td>Tropicana, Cohiba 1-2</td>
</tr>
<tr>
<td>Medical Student Mentoring Program</td>
<td>Sunday, March 17</td>
<td>3:30 - 6:30 PM</td>
<td>Room</td>
</tr>
<tr>
<td><strong>Lenox Hill Hospital/Northwell Health</strong></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Tropicana, Ashton 2</td>
</tr>
<tr>
<td><strong>Long Island Jewish Medical Center</strong></td>
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<td></td>
</tr>
<tr>
<td>Alumni Association Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 8:00 PM</td>
<td>Room 702</td>
</tr>
<tr>
<td><strong>Loyola University Medical Center</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sofield Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Room 704</td>
</tr>
<tr>
<td><strong>Mayo Clinic Orthopedic</strong></td>
<td></td>
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</tr>
<tr>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 8:00 PM</td>
<td>Room 2202</td>
</tr>
<tr>
<td><strong>MCW/Marquette Medical</strong></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Alumni Association Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 8:00 PM</td>
<td>Caesars Palace, Turin</td>
</tr>
<tr>
<td><strong>Medical College of Georgia at Augusta University</strong></td>
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</tr>
<tr>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 9:00 PM</td>
<td>Hard Rock Café, Cavern Club, 3771 Las Vegas Blvd</td>
</tr>
<tr>
<td><strong>Medical University of South Carolina</strong></td>
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<td></td>
</tr>
<tr>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 8:00 PM</td>
<td>Room 2301 A</td>
</tr>
<tr>
<td><strong>MedStar Georgetown University Hospital</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 8:00 PM</td>
<td>Herringbone Restaurant Patio, 3730 Las Vegas Blvd</td>
</tr>
<tr>
<td><strong>Meniscus Transplantation Study Group</strong></td>
<td></td>
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<td></td>
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<tr>
<td>Meeting</td>
<td>Friday, March 15</td>
<td>1:00 - 4:00 PM</td>
<td>Room 2206</td>
</tr>
<tr>
<td><strong>Mid-America Orthopaedic Association</strong></td>
<td></td>
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<tr>
<td>Finance Committee Meeting</td>
<td>Friday, March 15</td>
<td>9:30 - 10:30 AM</td>
<td>Room 2204</td>
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<tr>
<td>Board of Directors Meeting</td>
<td>Friday, March 15</td>
<td>10:30 AM - 1:30 PM</td>
<td>Room 2204</td>
</tr>
<tr>
<td><strong>Mount Sinai Hospital System</strong></td>
<td></td>
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<tr>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:30 - 9:30 PM</td>
<td>Room 2201 A</td>
</tr>
<tr>
<td><strong>Mt. Sinai Medical Center (Cleveland)</strong></td>
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<tr>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Rose Rabbit Lie, 3708 S Las Vegas Blvd</td>
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</table>
All events take place at the Venetian/Sands Expo unless noted otherwise.

**Northwestern University Feinberg School of Medicine**

**Alumni Reception**

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td></td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
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**NYOH Alumni Association / Columbia Orthopedics**

**Reception**

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<tbody>
<tr>
<td></td>
<td>Friday, March 15</td>
<td>6:00 - 10:00 PM</td>
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**NYU Langone HJD**

**Reunion**

<table>
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<th>Event Name</th>
<th>Date</th>
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<th>Location</th>
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<tbody>
<tr>
<td></td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Caesars Palace, Emperors I</td>
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**OREF**

**Board of Trustees Meeting**

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td></td>
<td>Tuesday, March 12</td>
<td>3:00 - 7:30 PM</td>
<td>906</td>
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**Champions Breakfast**

<table>
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<th>Date</th>
<th>Time</th>
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<tbody>
<tr>
<td></td>
<td>Thursday, March 14</td>
<td>6:30 - 8:00 AM</td>
<td>Palazzo Ballroom M</td>
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**Oregon Health & Science University**

**Alumni Reception**

<table>
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<tr>
<th>Event Name</th>
<th>Date</th>
<th>Time</th>
<th>Location</th>
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<tbody>
<tr>
<td></td>
<td>Thursday, March 14</td>
<td>6:00 - 7:30 PM</td>
<td>Caesars Palace, Turin</td>
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**Orthopaedic Laser Society of North America**

**Business Meeting**

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date</th>
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<th>Room</th>
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<tbody>
<tr>
<td></td>
<td>Thursday, March 14</td>
<td>6:00 - 7:30 AM</td>
<td>2201 B</td>
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**Orthopaedic Trauma Association (OTA)**

**Humanitarian Committee Meeting**

<table>
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<tr>
<th>Event Name</th>
<th>Date</th>
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<th>Room</th>
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<tbody>
<tr>
<td></td>
<td>Wednesday, March 13</td>
<td>8:00 - 9:00 AM</td>
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**Classification Meeting**

<table>
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<tr>
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<tbody>
<tr>
<td></td>
<td>Wednesday, March 13</td>
<td>8:00 - 10:00 AM</td>
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**Public Relations Committee Meeting**

<table>
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<tr>
<th>Event Name</th>
<th>Date</th>
<th>Time</th>
<th>Room</th>
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<tbody>
<tr>
<td></td>
<td>Wednesday, March 13</td>
<td>9:00 - 10:00 AM</td>
<td>703</td>
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</table>

**Military Committee Meeting**

<table>
<thead>
<tr>
<th>Event Name</th>
<th>Date</th>
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<tr>
<td></td>
<td>Wednesday, March 13</td>
<td>10:00 - 11:00 AM</td>
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**Evidence-Based Value & Quality (EBVQS)**

<table>
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<tr>
<th>Event Name</th>
<th>Date</th>
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<tr>
<td></td>
<td>Wednesday, March 13</td>
<td>11:00 AM - 12:00 PM</td>
<td>4802</td>
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</table>
All events take place at the Venetian/Sands Expo unless noted otherwise.

Video Library Committee Meeting
Friday, March 15
6:30 - 7:30 AM
Room 665

Health Policy Committee Meeting
Friday, March 15
7:00 - 8:00 AM
Room 3803

Registry Project Team Meeting
Friday, March 15
8:00 - 9:00 AM
Room 3803

Orthopaedics Overseas
Luncheon
Friday, March 15
12:00 - 2:00 PM
Room 2202

Palmetto Health USC Orthopedic Center and University of South Carolina School of Medicine
Alumni Reception
Thursday, March 14
6:00 - 8:00 PM
Tropicana, Ashton 4

Penn Medicine
Reception
Thursday, March 14
6:00 - 8:30 PM
Room 503

Penn State College of Medicine
Alumni Reception
Thursday, March 14
6:30 - 8:30 PM
Caesars Palace, Anzio

Piedmont Orthopedic Society
Reception
Friday, March 15
6:30 - 9:30 PM
Caesars Palace, Trevi

Rush Orthopedic
Alumni Association Reception
Friday, March 15
6:30 - 10:00 PM
Room 805

Rutgers RWJMS
Alumni Reception
Friday, March 15
6:00 - 8:00 PM
Caanello Ristorante Veneto, 3377 S Las Vegas Blvd

Ruth Jackson Orthopaedic Society
Program of Events
Tuesday, March 12
5:00 - 9:30 PM
Tropicana, Cohaiba 6-7

Professional Development Leadership Symposium
Wednesday, March 13
6:00 - 9:30 AM
Tropicana, Cohaiba 6

Saint Louis University School of Medicine
Reception
Friday, March 15
6:30 - 9:00 PM
Caesars Palace, Pisa

San Antonio Military Medical Center (SAMMC)
Alumni Association Reception
Wednesday, March 13
6:30 - 8:30 PM
CliQue, 3708 S Las Vegas Blvd

Society of Military Orthopaedic Surgeons (SOMOS)
Board of Directors Meeting
Thursday, March 14
3:00 - 6:00 PM
Room 903

Member Reception
Thursday, March 14
6:00 - 8:00 PM
Room 706

Southern California Orthopedic Institute Sports Medicine Fellowship (SCOI)
Reception
Friday, March 15
8:00 - 10:00 PM
Room 2201 A

St. Mary’s Medical Center (SFORP)
Alumni Reception
Friday, March 15
6:00 - 7:30 PM
Tropicana, Ashton 2

Stony Brook Orthopaedics
Alumni Association Reception
Friday, March 15
6:00 - 9:00 PM
Caesars Palace, Palermo

SUNY Downstate Medical Center
Alumni Reception
Friday, March 15
6:45 - 10:00 PM
Room 1002

Temple School of Medicine
Reception
Thursday, March 14
6:30 - 8:30 PM
Caesars Palace, Venice

The Hip Society
Board of Directors
Thursday, March 14
6:00 - 7:45 AM
Room 1004

The Knee Society
Executive Board Meeting
Friday, March 15
6:00 - 7:45 AM
Room 1004

The University of Chicago
Alumni Reception
Friday, March 15
6:30 - 8:30 PM
Room 4806
All events take place at the Venetian/Sands Expo unless noted otherwise.

<table>
<thead>
<tr>
<th>University of Texas Medical Branch at Galveston, Dept. of Orthopaedic Surgery &amp; Rehabilitation (UTMB DOSR)</th>
<th></th>
</tr>
</thead>
</table>
| **Alumni Reception** | Wednesday, March 13  
6:00 - 7:30 PM  
Encore at Wynn Hotel, 3121 S Las Vegas Blvd |

<table>
<thead>
<tr>
<th>Tufts Medical Center, NEBH, NWH and TUSM</th>
<th></th>
</tr>
</thead>
</table>
| **Alumni Reception** | Friday, March 15  
6:30 - 8:30 PM  
Room 2205 |

<table>
<thead>
<tr>
<th>Tulane University School of Medicine</th>
<th></th>
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</thead>
</table>
| **Caldwell Society Reception** | Thursday, March 14  
6:30 - 8:30 PM  
Room 801 |

<table>
<thead>
<tr>
<th>UAB Orthopaedic Surgery</th>
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</thead>
</table>
| **Alumni Social** | Thursday, March 14  
6:00 - 8:00 PM  
Hofbrauhaus, 4510 Paradise Road |

<table>
<thead>
<tr>
<th>UCLA</th>
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</table>
| **Alumni Reception** | Friday, March 15  
7:00 - 10:00 PM  
Room 804 |

<table>
<thead>
<tr>
<th>UnitedHealthcare (UHC)</th>
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</table>
| **SAB Meeting** | Friday, March 15  
6:00 - 7:30 AM  
Caesars Palace, Palermo |

<table>
<thead>
<tr>
<th>University at Buffalo</th>
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</table>
| **Alumni Reception** | Friday, March 15  
7:00 - 9:30 PM  
Celebrity Cars Event Center, 7770 Dean Martin Drive |

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<thead>
<tr>
<th>University of California, Irvine (UCI)</th>
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</table>
| **Alumni Reception** | Friday, March 15  
6:00 - 9:30 PM  
Caesars Palace, Sicily |

<table>
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<tr>
<th>University of California, San Francisco (UCSF)</th>
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</table>
| **Alumni Reception** | Thursday, March 14  
6:00 - 9:00 PM  
Wynn, Lakeside |

<table>
<thead>
<tr>
<th>University of Cincinnati - Freiberg Society</th>
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</table>
| **Reception** | Friday, March 15  
6:30 - 8:30 PM  
Room 2301 B |

<table>
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<tr>
<th>University of Illinois (UIC)</th>
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</table>
| **Alumni Association Gathering** | Thursday, March 14  
6:30 - 8:30 PM  
Caesars Palace, Tarranto |

<table>
<thead>
<tr>
<th>University of Iowa</th>
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</table>
| **Alumni Reception** | Friday, March 15  
6:00 - 7:30 PM  
Room 2204 |

<table>
<thead>
<tr>
<th>University of Kansas School of Medicine-Wichita</th>
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</table>
| **Alumni Reception** | Thursday, March 14  
6:30 - 8:30 PM  
Caesars Palace, Tarranto |

<table>
<thead>
<tr>
<th>University of Kentucky</th>
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| **Alumni Reception** | Thursday, March 14  
6:30 - 8:30 PM  
Tropicana, Ashton 5 |

<table>
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<tr>
<th>University of Louisville</th>
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</table>
| **Alumni Reception** | Thursday, March 14  
6:00 - 8:00 PM  
Tropicana, Ashton 1 |

<table>
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<tr>
<th>University of Maryland</th>
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</table>
| **Alumni Reception** | Thursday, March 14  
7:00 - 10:00 PM  
Grand Lux Cafe, 3355 S Las Vegas Blvd |

<table>
<thead>
<tr>
<th>University of Massachusetts</th>
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</table>
| **Alumni Reception** | Friday, March 15  
6:00 - 8:00 PM  
Caesars Palace, Anzio |

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<tr>
<th>University of Michigan</th>
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</table>
| **Reception** | Thursday, March 14  
6:00 - 8:00 PM  
Canaletto Ristorante Veneto, 3377 S Las Vegas Blvd |

<table>
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<tr>
<th>University of Minnesota</th>
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</table>
| **Residency Alumni Event** | Friday, March 15  
6:00 - 8:30 PM  
Room 3805 |

<table>
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<tr>
<th>University of Nebraska Medical Center</th>
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| **Alumni Gathering** | Thursday, March 14  
6:00 - 10:00 PM  
Palazzo, Hospitality Suites-Level 3 |

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<th>University of New Mexico</th>
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| **Alumni Reception** | Friday, March 15  
6:00 - 9:30 PM  
Room 2203 |
All events take place at the Venetian/Sands Expo unless noted otherwise.

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<th>University of Rochester</th>
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<th>Thursday, March 14</th>
<th>7:00 - 10:00 PM</th>
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<tbody>
<tr>
<td>University of Toronto</td>
<td>Alumni Reception</td>
<td>Wednesday, March 13</td>
<td>7:00 - 10:00 PM</td>
<td>Caesars Palace, Sicily</td>
</tr>
<tr>
<td>University of Virginia (UVA)</td>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:00 PM</td>
<td>Room 701</td>
</tr>
<tr>
<td>University of Wisconsin-Madison</td>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 9:00 PM</td>
<td>Caesars Palace, Trevi</td>
</tr>
<tr>
<td>UT College of Medicine - Chattanooga</td>
<td>Orthopaedic Society Reception</td>
<td>Thursday, March 14</td>
<td>6:30 - 9:30 PM</td>
<td>Caesars Palace, Pisa</td>
</tr>
<tr>
<td>UTHealth</td>
<td>Alumni Association Reception</td>
<td>Thursday, March 14</td>
<td>6:30 - 8:30 PM</td>
<td>Room 703</td>
</tr>
<tr>
<td>Vanderbilt</td>
<td>Reception</td>
<td>Friday, March 15</td>
<td>6:30 - 8:45 PM</td>
<td>Room 701</td>
</tr>
<tr>
<td>Virginia Commonwealth University (VCU)</td>
<td>Alumni Reception</td>
<td>Thursday, March 14</td>
<td>6:00 - 8:30 PM</td>
<td>Room 2201 B</td>
</tr>
<tr>
<td>Washington University J. Albert Key Alumni Society</td>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:30 - 9:00 PM</td>
<td>Room 803</td>
</tr>
<tr>
<td>West Virginia University (WVU)</td>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:00 - 7:00 PM</td>
<td>Tropicana, Montecristo 1</td>
</tr>
<tr>
<td>Willis C. Campbell Club</td>
<td>Alumni Reception</td>
<td>Friday, March 15</td>
<td>6:30 - 8:30 PM</td>
<td>Room 4805</td>
</tr>
</tbody>
</table>

**Affiliate Hotels**

**Caesars Palace**
3570 S Las Vegas Blvd
Ph: (702) 590-7111

**Tropicana**
3801 S Las Vegas Blvd
Ph: (702) 739-2222

**Venetian/Sands Expo**
201 Sands Ave.
Ph: (702) 414-1000
# Class of 2019

## Active Fellows

<table>
<thead>
<tr>
<th>Letter</th>
<th>Names</th>
</tr>
</thead>
</table>
| A      | David Abbasi, MD  
       | John David Adams, Jr, MD  
       | Muhibat A. Adelani, MD  
       | Michael J. Adler, MD  
       | Elaine Ahilen, MD  
       | Mohammed Al Saied, FRCS, MD  
       | Owen Ala, MD  
       | Thomas Cary Alexander, Jr, MD  
       | Hasson Alosh, MD  
       | Nirav Hasmukh Amin, MD  
       | Michael Haessam Amini, MD  
       | William Athans, MD  
       | Anthony Avery, MD  
       | Frank Avilucea, MD  
       | Jeremie M. Axe, MD |
|        | Aaron Burgess, MD  
       | David B. Bumpass, MD  
       | David Spaulding Brown, MD, PhD  
       | David B. Bumpass, MD  
       | Scot Brown, MD  
       | David Spaulding Brown, MD, PhD  
       | Michael Haessam Amini, MD  
       | William Athans, MD  
       | Anthony Avery, MD  
       | Frank Avilucea, MD  
       | Jeremie M. Axe, MD |
| C      | Nathan Cafferky, MD  
       | Lindsey Caldwell, MD  
       | Kirk A. Campbell, MD  
       | Curtis Campbell, MD  
       | Tyler Austin Cannon, MD  
       | Craig Capeci, MD  
       | Jason Capo, MD  
       | Ryan Matthew Carr, MD  
       | Alexandra Carrer, MD  
       | Joshua Carter, MD  
       | Casey Cates, MD  
       | Paul Celestre, MD  
       | Michael A. Charters, MD  
       | George W. Chaus, MD  
       | Luke S. Choi, MD  
       | Edmund Choi, MD  
       | Joone Ha James Choi, MD  
       | Imran Choudhry, MD  
       | Melissa Ann Christino, MD  
       | Matthew Clayton, MD  
       | Kirk G. Cleland, MD  
       | Blake C. Clifton, MD  
       | Leah Kathleen Cobb, MD  
       | Bryan Jason Conti, MD  
       | Megan Conti Mica, MD  
       | Luis Antonio Corrales, MD  
       | Derrick O. Cote, MD  
       | Courtney H. Cowden III, MD  
       | Timothy P. Craft, MD  
       | John Craw, MD  
       | Lauren Crocco, MD  
       | John Cesar Cuellar, MD  
       | Stephen H. Cummings, MD |
| D      | Jason Dahl, MD  
       | Justin Daigre, MD  
       | Steven Bradley Daines, MD  
       | Jason G. Dalling, MD  
       | Ashraf Dawish, MD  
       | Gregory A. Daut, MD  
       | Shaunette Davey, MD  
       | Jason Aaron Davis, MD  
       | Jana M. Davis, MD  
       | Ryan Christopher DeBlis, MD  
       | Daniel DeBottis, MD  
       | Jay Francis Deimel, MD  
       | Amanda Lauren Dempsey, MD  
       | Aditya M. Derasari, MD  
       | Mihir Desai, MD  
       | Arash A. Dini, MD  
       | Neil Thomas Dion, MD  
       | Michael C. Doarn, MD  
       | Zachary Domont, MD  
       | Jason R. Dutton, DO  
       | Mark Dwyer, MD |
| E      | David S. Ebenezer, MD  
       | Kostas Economopoulos, MD  
       | Rami Elkhechen, MD  
       | Michael Patrick Elliott, DO  
       | Karim Ahmed Elsharkawy, MD  
       | Gwendolyn Beth Emerson, MD  
       | Patrick Emerson, MD  
       | Christopher S. English, MD  
       | Kwame A. Ennin, MD, MS  
       | Uma E. Erard, DO  
       | Brian Evanston, MD |
| F      | David W. Fabi, MD  
       | Erin Farrelly, MD  
       | Nathan Faulkner, MD  
       | Joel P. Fechisin, MD  
       | Shaun M. Felcher, MD  
       | David Floyd Ferguson, MD  
       | Eric I. Ferkel, MD  
       | Allison Liefeld Fillar, MD  
       | Patrick R. Finkbone, MD  
       | Daniel E. Firestone, MD  
       | Ellen P. Fitzpatrick, MD  
       | Erycka Flore, DO  
       | Mark Floyd, MD  
       | Chad Fortun, MD  
       | Brett P. Frykberg, MD  
       | Eric C. Fu, MD |
| G      | Varun Kashyap Gajendran, MD  
       | Stacey Elisa Gallacher, MD  
       | Ryan Garcia, MD  
       | Matthew P. Gardner, MD  
       | Elizabeth Gardner, MD  
       | Jennie V. Garver, MD  
       | Joseph Gentile, MD  
       | Franklin Gettys, MD  
       | Petra Gheraibe, MD  
       | Bradley D. Gilliam, MD  
       | Mary Elizabeth Gilmer, MD  
       | John G. Ginnetti, MD  
       | Jordan Michael Glaser, MD  
       | Ryan J. Gnandt, MD  
       | Mufaddal M. Gombera, MD  
       | Michael R. Gombosh, MD  
       | Michael R. Gott, MD  
       | Michael Brandon Gottschalk, MD  
       | Chancellor Folsom Gray, MD  
       | Chris Grayson, MD  
       | Jennifer Jerele, MD  
       | Jennifer Gurske de Perio, MD |
| H      | Jennifer Elizabeth Hagen, MD  
       | Jonathan Hall, MD  
       | Richard J. Han, MD  
       | Lauren Hansen, MD  
       | John McCall Hardcastle, MD  
       | Kevin D. Hardt, MD  
       | Samuel Harmsen, MD  
       | Seth W. Harrer, MD  
       | Dorothy Y. Harris, MD  
       | Ryan Harrison, MD  
       | Brandi Hartley, MD  
       | Timothy A. Hartshorn, MD  
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       | Brandon Hayes, MD  
       | Victor H. Hernandez, MD, MS  
       | Greg Allen Herzog, MD  
       | Dana J. Hess, MD  
       | Andrew Ho, MD  
       | Jason P. Hochfelder, MD  
       | Christopher W. Hodgkins, MD  
       | Daniel Hoopes, MD  
       | Taylor Horst, MD  
       | Robert E. Howell III, MD  
       | Tamara Nicole Huff, MD  
       | Adeel Husain, MD  
       | Michael McKinley Hussey, MD  
       | Daniel Huttman, MD |
| I      | Nicholas Iannuzzi, MD  
       | Kurt David Iceno, MD  
       | Emmanuel Illical, FRCS, MD  
       | Aaron Insel, MD  
       | Conrad Blake Ivie, MD  
       | Kayita Iyengar, MD |
| J      | Sami Jaafar, MD  
       | Timothy J. Jackson, MD  
       | Mark Edward Jacobson, MD  
       | Nathan Albert Jacobson, MD  
       | Zachary S. Jager, MD  
       | Kenneth Jahng, MD  
       | Jeremy R. James, MD  
       | Yashar Javidan, MD  
       | Derek R. Jenkins, MD  
       | Jonathan K. Jennings, MD  
       | Jason Michael Jennings, MD  
       | Jennifer Jerele, MD  
       | Kevin N. Jiang, MD  
       | Edil O. Jimenez-Perez, MD  
       | Jeffrey S. Johnson, MD  
       | John Jones, MD  
       | Robert Benjamin Jones, MD  
       | Venkata Karrthik Jonna, MD  
       | William J. Jordan, MD  
       | David Joyce, MD |

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K
Jay Vinodrai Kalawadia, MD
Daniel Kang, MD
Kevin Kang, MD
Jonathan R. M. Kaplan, MD
Matthew Karek, MD
Anjan P. Kaushik, MD
Mark M. Kayanja, MD
Jason Kelly, MD
Nicholas Kenney, MD
Curtis J. Kephart, MD
Christopher Kestner, MD
Mahmoud Michael Khair, MD
Matthew Lewis, MD
Louis Lewandowski, MD
Mark Lembach, MD
Thu-Ba LeBa, MD
Mark Lempach, MD
Daniel M. Lerman, MD
Daniel T. Kopp, MD
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Sanjit R. Konda, MD
David Kovacevic, MD
Loukas Koyonos, MD
Chad A. Krueger, MD
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Matthew Niesen, MD
Sergiy Nesterenko, MD
Ian Nelson, MD
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Matthew Noyes, MD
Matthew Noyes, MD
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Elizabeth Plachter, MD
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Sara Mari Sakamoto, MD
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Mark J. Sando, MD
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William M. Sayde, MD
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Patrick Christopher Schottei, MD
Scott J. Schoenleber, MD
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Mark Seeley, MD
Adam Joseph Seidl, MD
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Thorsten M. Seyler, MD, PhD
Nathan Turnbull, MD
V
Cathryn Joyce Vadala, MD
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Raghuyeve Muppavarapu, MD
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Timothy Ryan Murphy, MD
Loi H. Mustafa, MD
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Y
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Zaneb Yaseen, MD
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Seung J. Yi, MD
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Brandon J. Yuan, MD

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Jake Zarah, MD
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Giriraj Gupta, MD
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Rupesh Tarwala, MD
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Ettore Vulcano, MD
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Brian Cross, DO
Andrew Farber, DO
Christopher Happ, DO
Kristen Herbst, DO
Zeshan Hyder, DO
Todd Jaeblon, DO
Steven M. Johnson, DO
Kory Johnson, DO
Farhan Karim, DO
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David Macdonald, DO
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Samer Saqqa, DO
Ryan Siwiec, DO
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Franz Kralinger, MD

Bangladesh
Mohammad Shafiquil Alam, MD
Khaled Ibney Anwar, DO
G.M. Jahangir Hossain, MD

Barbados
Ayana Crichlow, MBBS

Belgium
Olivier Bath, MD
Aad Dholander, MD, PT, PhD

Bolivia
Diego Eduardo Soruco, MD

Brazil
Bruno Vierno De Araujo, MD
Jose Ronaldo Assis, MMED (Ortho)

Chile
Rafael Calvo, MD
Cesar Alonso Cisterna, MMED (Ortho)
Sebastián Irarrázaval, MD
Franz Kosche, MD
Martin A. Salgado, MD

China
Shuai An, MD
Wei Guo, MD, PhD
Jian Li, Sr, MD
Dasheng Lin, MD

Colombia
Rodolfo Antonio Gomez Sanchez, MD
Eduardo Gonzalez Edery, MMED (Ortho)
Juana Medina, MD
Manuel Fernando Mosquera, MD
Jorge De Jesus Perez Diaz, MD
Ximena Maria Rios Garrido, MD

Costa Rica
Carlos Aguila, MD

Dominican Republic
Ariel Frias Santana, MD
Alfredo Gomez Nin, MD
Heriberto Herrera Pontiere, MD
Rolando Inoa, MD
Carlos Manuel Morales Angeles, MD
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